

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES 1 20	
2. AMENDMENT/MODIFICATION NO. 0003		3. EFFECTIVE DATE 20-Sep-2001		4. REQUISITION/PURCHASE REQ. NO. W16ROE-1207-8979		5. PROJECT NO.(If applicable)	
6. ISSUED BY USA ENGINEER DISTRICT, NEW YORK ATTN: CENAN-CT ROOM 1843 26 FEDERAL PLAZA (DACA51) NEW YORK NY 10278-0090		CODE DACA51		7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. DACA51-01-B-0026	
				X		9B. DATED (SEE ITEM 11) 16-Aug-2001	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A.THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B.THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C.THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D.OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) This solicitation is ammended as deccribed in attached continuation pages. All other terms and conditions remain the same. The late bid rule applies. If any questions please contact us at (917)417-9136							
<small>Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.</small>							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
_____ (Signature of person authorized to sign)				BY _____ (Signature of Contracting Officer)		20-Sep-2001	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

Changes in Solicitation/Contract/Order Form

Changes in Section 00010

SUB-CLIN 0001A was added.

CLIN 0023 was added.

CLIN 0024 was added.

CLIN 0025 was added.

Revised Price Schedule

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	Battle Simulation Center All work complete for the Battle Simulation Center , excluding LIN 0001A and all options.	1.00	Lump Sum		
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001A	Building interior category 5e All work necessary to complete the building interior category 5e #24 Awg UTP copper network (data & voice) cabling for the battle simulation, tactical, administrative and after action review (AAR) services, which shall include labor and material, all Cat 5e termination devices and cable testing (data & voice), RJ-45 jacks, 110 patch panels and patch cords. All necessary work is shown on Telecommunication drawings and specifications 16710, "Premises Distribution System".	1.00			
				NET AMT	

Total Base bid (LINS 0001 through 0001A) \$_____

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002	Option: All work to complete all Landscaping for the Battle Simulation Center	1.00	Lump Sum		
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003	Option: All work necessary in the demolition, transportation, off site disposal Option: All work necessary in the demolition, transportation, off site disposal and site restoration of Building 682, as shown on the plans and specifications, complete. Do not include line items 0004 and 0005 in this price total. Line items 0004 and 0005 are to be priced separately.	1.00	Lump Sum		
				NET AMT	

ITEM NO 0004	SUPPLIES/SERVICES Option: Bldg 682	QUANTITY 1,604.00	UNIT Square Foot	UNIT PRICE	AMOUNT
All work necessary in the removal and disposal of asbestos vinyl floor tile as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.					
NET AMT					<hr/>
ITEM NO 0005	SUPPLIES/SERVICES Option: Bldg 682	QUANTITY 200.00	UNIT Square Foot	UNIT PRICE	AMOUNT
All work necessary in the removal and disposal of lead based paint as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.					
NET AMT					<hr/>
ITEM NO 0006	SUPPLIES/SERVICES Option: All work necessary in the demolition	QUANTITY 1.00	UNIT Lump Sum	UNIT PRICE	AMOUNT
All work necessary in the demolition, transportation, off site disposal and site restoration of building 671 as shown on the plans and specifications, complete. Do not include line items 0007 and 0008 in this price total. Line items 0007 and 0008 are to be priced separately.					
NET AMT					<hr/>
ITEM NO 0007	SUPPLIES/SERVICES Option: Bldg 671	QUANTITY 3,242.00	UNIT Square Foot	UNIT PRICE	AMOUNT
All work necessary in the removal and disposal of asbestos vinyl floor tile as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.					
NET AMT					<hr/>
ITEM NO 0008	SUPPLIES/SERVICES Option: Bldg 671	QUANTITY 100.00	UNIT Square Foot	UNIT PRICE	AMOUNT
All work necessary in the removal and disposal of lead based paint as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.					
NET AMT					<hr/>

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009	Option:	1.00	Lump Sum		
	All work necessary in the demolition, transportation, off site disposal and site restoration of building 672 as shown on the plans and specifications, complete. Do not include line items 0010 and 0011 in this price total. Line items 0010 and 0011 are to be priced separately.				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010	Option: Bldg 672	672.00	Square Foot		
	All work necessary in the removal and disposal of asbestos vinyl floor tile as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0011	Option: Bldg 672	100.00	Square Foot		
	All work necessary in the removal and disposal of lead based paint as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0012	Option:	1.00	Lump Sum		
	All work necessary in the demolition, transportation, off site disposal and site restoration of building 673 as shown on the plans and specifications, complete. Do not include line items 0013 and 0014 in this price total. Line items 0013 and 0014 are to be priced separately. The quantity in this CLIN is an Estimated Quantity.				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0013	Option: Bldg 673	3,242.00	Square Foot		
	All work necessary in the removal and disposal of asbestos vinyl floor tile as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0014	Option: Bldg 673	100.00	Square Foot		

All work necessary in the removal and disposal of lead based paint as shown on the plans, complete.

The quantity in this CLIN is an Estimated Quantity.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0015	Option:	1.00	Lump Sum		

All work necessary in the demolition, transportation, off site disposal and site restoration of building 674 as shown on the plans and specifications, complete. Do not include line items 0016 and 0017 in this price total. Line items 0016 and 0017 are to be priced separately.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0016	Option: Bldg 674	3,830.00	Square Foot		

All work necessary in the removal and disposal of asbestos vinyl floor tile as shown on the plans, complete.

The quantity in this CLIN is an Estimated Quantity.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0017	Option: Bldg 674	100.00	Square Foot		

All work necessary in the removal and disposal of lead based paint as shown on the plans, complete.

The quantity in this CLIN is an Estimated Quantity.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0018	Option:	1.00	Lump Sum		

All work necessary in the demolition, transportation, off site disposal and site restoration of building 679 as shown on the plans and specifications, complete. Do not include line items 0019 and 0020 in this price total. Line items 0019 and 0020 are to be priced separately.

NET AMT

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0019	Option: Bldg 679	500.00	Square Foot		
	All work necessary in the removal and disposal of asbestos vinyl floor tile as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.				
				NET AMT	
<hr/>					
ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0020	Option: Bldg 679	100.00	Square Foot		
	All work necessary in the removal and disposal of lead based paint as shown on the plans, complete. The quantity in this CLIN is an Estimated Quantity.				
				NET AMT	
<hr/>					
ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0021	Option:	1.00	Lump Sum		
	All work necessary in the demolition, transportation, off site disposal and site restoration of building 685 as shown on the plans and specifications, complete. Do not include line item 0022 in this price total. Line item 0022 is to be priced separately.				
				NET AMT	
<hr/>					
ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0022	Option: Bldg 685	120.00	Linear Foot		
	All work necessary in the removal and disposal of all pipe insulation containing asbestos as shown on the plans, complete.				
				NET AMT	
<hr/>					
ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0023	Option: Interior category 6	1.00	Lump Sum		
	All work necessary to complete the building interior in order to upgrade the building communications network from Category 5e to Category 6 #24 Awg UTP copper network (data and Voice) cabling for the battle simulation, tactical, administrative and after action review (AAR) services, which shall include labor and material, all Cat 6 termination devices and cable testing (data and voice), RJ-45 jacks, 110 patch panels and patch cords				
				NET AMT	
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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0024	Option: 5 underground storage tanks	1.00	Lump Sum		
	All work necessary for removal of five (5) underground storage tanks, to include transportation, off site disposal and site restoration				
				NET AMT	

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0025	Option: Removal transportation off site disposal of soil	50.00	Cubic Yard		
	All work necessary for the removal, transportation, off site disposal of contaminated soil, and replace with clean fill The quantity in this CLIN is an Estimated Quantity.				
				NET AMT	

TOTAL BASE BID (LINS 0001-0001A) Inclusive

\$ _____

TOTAL OPTIONS (LINS 0002-0025) Inclusive

\$ _____

TOTAL BASE BID + OPTIONS

\$ _____

Notes:

- Prices for optional bid items, 0002 through 0025 shall be valid for a period of 365 calendar days after notice to proceed.
- The award of any option is the sole discretion of the Government.

Changes in Section SF 30

Summary of Technical Changes

NOTICE TO BIDDERS

Failure of the bidder to
Acknowledge receipt of
this Amendment in
Item 19 of Standard Form
1442 (Pg. 00010-2) may
result in REJECTION of
the bid.

IFB NO. DACA51-01-B-0026

Amendment No. 3

Department of the Army, NYD
Corps of Engineers
New York, NY 10278-0090

AMENDMENT NO.3 TO SPECIFICATIONS ISSUED 11 SEPTEMBER 2001 FOR
FY-2001 **BATTLE SIMULATION CENTER, FORT FRUM, NEW JERSEY.**

TO BIDDER

1. Add the Following Specification Sections:

SECTION 01570 – LEAD SAMPLING AND TESTING, FORT DRUM, NEW YORK

SECTION 01580 – LEAD-BASED PAINT ABATEMENT OF WORLD WAR II
STRUCTURES, FORT DRUM, NEW YORK

SECTION 02821 – FENCING

SECTION 08710 – DOOR HARDWARE

SECTION 08900 -- GLAZED CURTAIN WALL

SECTION 10430 -- EXTERIOR SIGNAGE

SECTION 10999 – MISCELLANEOUS SPECIALTIES

SECTION 11162A – LOADING DOCK LEVELER

SECTION 12320 -- CABINETS AND COUNTERTOPS

SECTION 12490 -- WINDOW TREATMENT

2. Delete the Following Sections Entirely

SECTION 02722 – AGGREGATE AND/OR GRADED-CRUSHED AGGREGATE BASE COURSE. Delete
in its entirety.

SECTION 10100 – VISUAL COMMUNICATION SPECIALTIES. Delete in its entirety and insert 10100A –
VISUAL COMMUNICATION SPECIALTIES in its place.

SECTION 10800 – TOILET ACCESSORIES. Delete in its entirety and insert 10800A – TOILET
ACCESSORIES in its place.

SECTION 14240 – ELEVATORS, HYDRAULIC. Delete in its entirety and insert 14240A – ELEVATORS, HYDRAULIC in its place.

3. Make the Following Changes in Specifications.

SECTION 00800 – SPECIAL CONTRACT REQUIREMENTS, Paragraph 1.1.A, COMMENCEMENT PROSECUTION AND COMPLETION OF WORK.

Change contract duration from 660 calendar days to 730 calendar days.

SECTION 00800 – SPECIAL CONTRACT REQUIREMENTS, Paragraph 3.33, PARTNERSHIP IMPLEMENTATION PLAN.

Delete the sentence: “The Cost of the facilitator and conference facility will be shared by the Contractor and Government.”

In the sentence: “All other costs associated with partnership implementation will be borne by the Contractor.” delete the word “other.” The sentence shall now read:

“All costs associated with partnership implementation will be borne by the Contractor.”

SECTION 02220 – DEMOLITION. Subpart 1.1, SCOPE, Shall read:

The Contractor shall provide all supervision, labor, equipment, and materials necessary to perform all operations in connection with the demolition and disposal of wood framed, wood and metal sided and buildings, building services and foundations. The Contractor shall also provide all supervision, labor, equipment and materials to perform removal of fuel oil storage tanks, tree removal, additional concrete removal, asphalt pavement removal, removal of metal siding for government salvage, asbestos abatement, lead abatement, and restoration of all demolition and removal sites.

Prior to start of demolition work, asbestos containing material (ACM) and lead based paint (LBP) must be removed and disposed of in compliance with USACE EM-385-1-1, current Federal, State, and local rules and regulations, and contract documents.

Paragraph 5.1.5, Removal and Disposal of ACM shall read: Remove all material containing asbestos. (See Dwg. H-001.)

Paragraph 5.1.6, Removal and Disposal of LBP shall read: Remove all lead based paint. (See Dwg. H-002.)

SECTION 02630 – STORM-DRAINAGE SYSTEM.

PART 1, References. Add the following reference:

**AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY
ASSOCIATION (ARENA)**

ARENA Manual I (1999) Manual for Railway Engineering (4 Vols.)

Paragraph 2.1.1, Concrete Pipe, shall read:

ASTM C 76M, Class II, for 380, 457, 533, and 915 diameter pipe.

ASTM C 76M, Class III, for 300 and 610 diameter pipe.

ASTM C 76M, Class IV, for 1067 diameter pipe.

Paragraph 2.1.1.1, Nonreinforced Pipe, shall read:

ASTM C 14M, Class I, for 380 and 915 diameter pipe.

ASTM C 14M, Class II, for 300, 457, 533, and 610 diameter pipe.

Paragraph 2.1.1.2, Cast-In-Place Nonreinforced Concrete. Delete in its entirety.

Paragraph 2.1.4.1, Smooth Wall PE Pipe. Delete in its entirety.

Insert the following paragraph:

2.1.3.4 Profile PVC Pipe.

ASTM F 794, Series 46, produced from PVC certified by the compounder as meeting the requirements of ASTM D 1784, minimum Cell Class 12454-B.

Paragraph 2.2.7.4, Smooth Wall PE Plastic Pipe. Delete in its entirety.

SECTION 02710 -- BITUMINOUS-STABILIZED BASE COURSE.

Paragraph 2.1.1 Delete the bracketed text: [Enter Appropriate Subpart Title 2.1.1] .

Paragraph 2.1.2, Material to be Stabilized shall be renamed Paragraph 2.1.2, Material. The text of the paragraph shall be changed to read:

Select material shall conform to the following gradation:

NYS DOT SECTION 302-2.03, OPTION C.

The liquid limit shall be less than 40 and the plasticity index shall be less than 10 when tested in accordance with ASTM D 4318. The fine and coarse aggregates, or a composite mixture, shall not show stripping in excess of 5 percent. If stripping occurs, an approved method of treating shall be used to prevent stripping. The above material shall conform to NYS DOT Standard Specifications, Section 304, Type 2."

SECTION 02741 – HOT-MIX ASPHALT FOR ROADS,

Paragraph 2.1.4, Table 2, change NYSDOT Table 40-H to NYSDOT Table 401-1.

SECTION 07570 SPRAYED POLYURETHANE FOAM (SPF) ROOFING, Paragraph 3.1.1, Urethane Foam Application shall read:

Foam shall be sprayed on the prepared surface, as noted in Specification Section 07412 NON-STRUCTURAL METAL ROOFING in 13 to 25 mm (1/2 to 1 inch) lifts. Time between lifts shall not exceed 4 hours. The finished surface shall be "orange peel" or smoother. An approved sample shall be used as the standard for determining the acceptability of the foam finish. Cured foam shall be free from water, dust, oils, and other materials that would impair adhesion of the protective coating. No foam shall be allowed to stand overnight without a protective covering. Foam shall cure at least 1 hour, unless otherwise recommended by the manufacturer before application of protective coating. Any nonadherence of foam to substrate shall be corrected and pinholes shall be finished flush with an approved sealant before finish coating is applied. Overspraying to correct an unacceptable surface condition will not be permitted. The finished insulation shall

not vary more than 6 mm (1/4 inch) when measured with a 3 m (10 foot) straight edge parallel and perpendicular to the roof slope. Apply foam as required, to be flush with the top of the wood blocking fastened to the top flange of "Z" purlins (see drawings for details). Apply each spray pass at right angles to the previous pass to the extent practicable. Each pass shall be between 13mm (1/2 inch) and 25 mm (1 inch) in thickness. Minimum total thickness is 152 mm (6 inches). Corrections to foam thickness by shaving are to be held to a minimum. All shaved areas shall receive one coat of Evercoat acrylic paint or approved equal.

SECTION 10660 – FIRE RATED STEEL FRAMING SYSTEM. In Paragraph 2.1.4, Hardware, change Section 08700 to Section 08710.

SECTION 10800 – TOILET ACCESSORIES. In Paragraph 2.2.4, Mirror Tilt (MT), the sentence "Size shall be as indicated on the drawings" shall read: "Size shall be 915 mm (36 inches) H and 510 mm (20 inches) W."

SECTION 15991 -- DIRECT DIGITAL CONTROL OF HVAC (Main Table of Contents, p. 5). Delete reference to this section, and replace with Section 15951 -- DIRECT DIGITAL CONTROL FOR HVAC (NETWORKED BUILDING CONTROLLER), as included in Amendment 1.

4. Change the Following Drawings.

A-101 Floor Plan: Change as shown.

A-102 2nd Floor Plan: Change as shown.

A-103 Attic Floor Plan: Change as shown.

A-104 Roof Plan: Change as shown.

A-201 Elevations: Change as shown.

A-202 Elevations: Change as shown.

A-301 Building Sections: Change as shown.

A-302 Building Sections, Change as shown.

A-401 Wall Sections, Change as shown.

A-402 Section, Partial Floor Plan, Change as shown.

A-403 Partial Section: Change as shown.

A-501 Details: Change as shown.

A-502 Details: Change as shown.

C-1 Site Plan I: Change as shown.

C-3 Grading and Drainage Plan I: Change as shown.

C-15 Storm Drainage Outfall: Change as shown.

C-14 Storm Drain Profiles: Change as shown.

C-15 Site Details 1: Change as shown.

C-16 Site Details 2: Change as shown.

C-17 Site Details 3: Change as shown.

E-402 Electrical Site Plan – Part 2: Change as shown.

E-504 Electrical Details IV: Change as shown.

F-102 Fire Protection, Second Floor Plan: Change as shown.

F-103 Fire Protection, Attic/Fan Room, Third Floor Plan: Change as shown.

M-101 HVAC Duct – First Floor Plan: Change as shown.

M-102 HVAC Duct – Second Floor Plan: Change as shown.

M-103 HVAC Duct Attic/Fan Room – Third Floor Plan: Change as shown.

M-105 HVAC Duct Isometric Plan: Change as shown.

M-106 HVAC Piping Second Floor: Change as shown.

M-107 HVAC Piping Attic/Fan Room Third Floor: Change as shown.

M-109 HVAC Part Plan, First Floor Toilets: Change as shown.

M-110 HVAC Part Plan, Second Floor Toilets: Change as shown.

M-111 HVAC art Plan, Mechanical Equipment Room: Change as shown.

M-601 Hot Water Boiler Schedule: Delete Notes No. 5 and No. 6 in their entirety.

P-001 Plumbing Legend, Fixture Schedule, H.W. Heater schedule: Change as shown.

P-102 Plumbing (Supply Water) – Cold and Hot Domestic Water Supply, Second Floor Plan: Change as shown.

P-105 Plumbing (Sanitary and Venting) – Attic/Fan Room, Third Floor: Change as shown.

P-106 Plumbing (Storm Drainage) – First and Second Floor Plans: Change as shown.

P-301 Riser Diagram – Sanitary Waste and Vent and Supply Water: Change as shown.

R-9 Site Topographic Survey: Change as shown.

S-101 General Notes: Change as shown.

S-102 Foundation Plan: Change as shown.

S-103 Foundation Sections and Details: Change as shown.

S-104 Second Floor Framing Plan: Change as shown.

- S-105 Attic Floor Framing Plan: Change as shown.
- S-106 Roof Framing Plan: Change as shown.
- S-108 Roof Sections and Details: Change as shown.
- S-109 Slab and Misc. Concrete Sections and Details: Change as shown.
- S-110 Column Schedule 1: Change as shown.
- S-111 Column Schedule 2: Change as shown.
- S-112 Partition Supports: Change as shown.
- S-113 Force Diagrams: Change as shown.
- S-114 Canopy and Loading Dock: Change as shown.

5. Add the Following Drawings.

- A-203 Elevations.
- A-204 Elevations.
- C-22 Oil-Water Separator Details.
- C-23 Infiltration Site Plan and Demolition Plan.
- C-24 Infiltration Basin Grading and Drainage and Erosion Control Plan.
- C-25 Infiltration Basin Cross Sections.
- C-26 Storm Drainage Profiles.
- C-27 Fence and Gate Details.
- C-28 Smoking Shed and Storage Shed.
- P-109 Condensate Drain and Indirect Waste Line, Second Floor.
- S-115 Details – Main Entrance.
- S-117 Guard House and Column Schedule IV.
- S-118 Masonry Notes and Lintel Schedule.

Questions and Answers

FOR INFORMATION PURPOSES ONLY

Q 1. There are several specification sections missing from the specifications according to the Table of Contents. They are as follows:

08700 Builders Hardware
 10260 Wall & Corner Protection
 10430 Exterior Signage
 10440 Interior Signage
 10910 Projection Screen
 11162 Loading Dock Leveler
 12390 Cabinets and Cabinet Tops
 12540 Window Blinds, Shades, and Drapery Hardware
 13121 Metal Building System
 13945 Preaction Sprinkler system
 14240 Elevators Hydraulic
 15991 Direct Digital Control of HVAC
 15995 Commissioning of HVAC Systems

R 1.

08700 Builders Hardware. See this amendment section 08170 Door Hardware.
 10260 Wall & Corner Protection will not be issued.
 10430 Exterior Signage. See this amendment.
 10440 Interior Signage see Amendment 1.
 10910 Projection Screen. See this amendment section 10100.
 11162A Loading Dock Leveler. See this amendment.
 12390 Cabinets and Cabinet Tops. See this amendment section 12320.
 12540 Window Blinds, Shades, and Drapery Hardware. See this amendment section 12490 Window Treatment.
 13121 Metal Building System (Minor Requirements) will not be issued.
 13945 Preaction Sprinkler System see Amendment 1
 14240 Elevators Hydraulic see Amendment 1.
 15991 Direct Digital Control of HVAC deleted. Changed to 15951 Direct Digital Control For HVAC (Networked Building Controller) see Amendment 1
 15995 Commissioning of HVAC Systems see Amendment 1

Q 2. On drawing S-102, please advise on the size of the pier footings and piers for the eight canopy columns.

R 2. Provided on Sheet S-114 in this amendment.

Q 3. Drawing B / S114 wall section does not show the wall thickness. Please advise.

R 3. See Sheet S-117 in this amendment.

Q 4. Please advise on the locations of the dowelled construction joints and contraction joints as shown on drawing S-109.

R 4. See this amendment.

Q 5. Please provide edge details for the 2nd floor framing plan S-104 and the attic floor framing plan S-105. Also please provide the slab thickness.

R 5. See this amendment.

Q 6. The column schedules on drawings S-110 and S-111 appear to be incomplete (example: base plate size, type, pier type, etc.). Please provide this information.

R 6. See this amendment.

Q 7. Please provide the depth of footings C, D, E, and F on drawing S-102.

R 7. See this amendment

Q 8. No Specification Sections were included for the following:

08700 Builders Hardware
 10260 Wall & Corner Protection
 10430 Exterior Signage
 10440 Interior Signage
 10910 Projection Screen
 11162 Loading Dock Leveler
 12390 Cabinets and Cabinet Tops
 12540 Window Blinds, Shades, and Drapery Hardware
 13121 Metal Building System (Minor Requirements)
 14240 Elevators Hydraulic
 15590 Testing, Adjusting, and Balancing of HVAC Systems
 15991 Direct Digital Control of HVAC
 15995 Commissioning of HVAC Systems

R 8.

08700 Builders Hardware. See this amendment section 08170 Door Hardware.
 10260 Wall & Corner Protection will not be issued.
 10430 Exterior Signage. See this amendment.
 10440 Interior Signage see Amendment 1.
 10910 Projection Screen. See this amendment section 10100.
 11162A Loading Dock Leveler. See this amendment.
 12390 Cabinets and Cabinet Tops. See this amendment section 12320.
 12540 Window Blinds, Shades, and Drapery Hardware. See this amendment section 12490 Window Treatment.
 13121 Metal Building System (Minor Requirements) will not be issued.
 13945 Preaction Sprinkler System see Amendment 1.
 14240 Elevators Hydraulic see Amendment 1.
 15590 Testing, Adjusting, and Balancing of HVAC Systems in original specifications .
 15991 Direct Digital control of HVAC deleted. Changed to 15951 Direct Digital Control For HVAC (Networked Building Controller) see Amendment 1
 15995 Commissioning of HVAC Systems see Amendment 1

Q 9. Is there a separate specification section for Louvers or are they part of the specification section 07600 Sheet Metalwork, General.

R 9. Louvers are part of section 07600 Sheet Metalwork.

Q 10. Room 136 - War Simulation Room shows door 174. The door schedule on print A-603 does not show a door 174.

R 10. Door number shall be 104.

Q 11. Door 211 indicates in the remarks of the door schedule to see details on Drawing A-802. No details are found.

R 11. See Detail sheet A-802 and specification section 10660, para 2.1.4 in this amendment.

Q 12. No information is found for the door between Administration Room 101 and the vestibule 102. The only information is the door is 4' wide. Please provide additional information.

R 12. There is no door. Noted on the plan as an information window. See Detail on drawing A-603, Amendment 1.

Q 13. In specification section 10800 2.2.3 Mirror, Metal (MM) and 2.2.4 Mirror, Tilt (MT) both indicate size shall be in accordance with the drawings. No information is found on the drawings for size and quantity. More information is needed in 3.3 Schedule for size and quantity.

R 13. See this amendment.

Q 14. Specifications calls for precast concrete trim, lintels, copings, and door sills. The Architectural Drawings do not show any precast. Please clarify.

R 14. Delete precast concrete trim, lintels, copings and door sills.

Q 15. The specifications call for extensive grouting of masonry. None is shown. Please clarify.

R 15. Do not understand the question.

Q 16. Merry Brother Brick is specified. Local brick suppliers have indicated there may be better brick manufacturers better suitable for this local area and its associated weather. Can a different brick manufacturer be substituted?

R 16. Yes, provided that they match the color and texture of the brick specified. Approval of brick by Contracting Officer and Ft. Drum.

Q 17. I request bid date be extended by at least one week.

R 17 Bid Opening postponed to 26 September 2001 at 2:00 pm.

Q 18. Section 00900 Wage Rates shows Carpenters, Cement Masons, Laborers, Plumbers, Power Equipment Operators, Forklift, Roofers rates for SUNY 1003A 05/01/1996. Is there a more recent wage decision for this category?

R 18 Wage Rates are current.

Q 19. Print C-10 shows UST - Underground Storage Tanks, do these tanks get removed. The print doesn't show the tanks being removed.

R 19. All five (5) USTs will be removed (see drawings H-003, H-004 and H-005 in Amendment 1).

Q 20. Are the chairs and tables on print A101 for the AAR/Conf Rooms 145 A & B part of the project or is the government providing and installing these items.

R 20. Chairs and tables are part of the project.

Q 21. Print A101 and A102 shows M.B. (typical). We assume these are Marker Boards. Is there a specification and sizes for these M.B.s.

R 21. No Marker Boards required.

Q 22. The AAR/Conf Room 145A & B shows Copy Boards. Is there a specification and size for copy boards.

R 22. See this amendment section 10100A.

Q 23. The break room #104 shows countertop with sink, base cabinet, and hung cabinet. Are there any details for this unit.

R 23. See this amendment section 12320. No details will be issued.

Q 24. There is no landscaping specification for this project. This is a separate bid item and additional information is needed.

R 24. Section 02930 Exterior Planting was issued as part of Amendment 1.

Q 25. Will a spoil area be provided on Fort Drum for this project.

R 25. Spoil area is indicated on Section 02316.

Q 26. On Print A-101 and A-402 brick wall at the canopies call for 4 feet high walls. Prints A-201 and A-202 shows 4 - 8 “soldier courses and scales at 32”. Please confirm that the walls are 4’ high.

R 26. Walls shall be 4’0” high.

Q 27. Please provide the profile of the storm line on sheet C-5 from MH-7 to the infiltration basin.

R 27. The infiltration basin and the plan and profile of the storm line from MH-7 to the infiltration basin are provided in Amendment 2.

Q 28. Drawing E402 has 2 notes stating for us to provide 3 – 266 MCM ACSR Cables. One note says to run from pole 2B82 – D88. The other note says to run from pole 4B82 –D88. Is this the same 3 cables? Also, the 2nd note says to see E402 for continuation. Where on E402?

R 28. The correct note should state: “Provide three (3) 266 MCM Conductors Plus one (1) 2/0 ASCR Neutral From Pole 2B82 To D88. See Sheet E-401 For Continuation Of Site Plan.” See this amendment for the revision.

Q 29 Drawing E-101 shows (4) switch banks consisting of 3–way and 4-way dimming switches to control lighting in AAR/CONF rooms 145/A & 145/B. No specification is given for the dimmers, other than “solid-state, sized for load” and they appear to be standard individual dimmers ganged together. Is the desired effect to have dimming capability at all (4) locations, for all lights in both rooms? If so, a dimming system may be more feasible/practical. Otherwise, is the desired effect to have only switching at all (4) locations, with dimming available at control room 146 for lights in room 145/A, and at control room 147 for lights in room 145/B?

R 29. Provide dimming control for rooms 145A and 145B per drawing E-101. Provide dimming capability at all four (4) locations for all lights in both rooms.

Q30. Note #17 on sheet E-001 states “.... All circuits (lighting, receptacles, etc.) shall have a separate ground conductor.....” Does the term “separate” refer to an equipment ground wire being present in each conduit (as per specifications section 3.1.3, p 16415-38) or is a ground wire required for each circuit, even though more than one circuit is present within each conduit?

A 30. An equipment ground wire shall be installed for each circuit as per specification section 16415 and NFPA 70.

R 31. Drawing E501 Pad mounted transformer detail refers us to sheet S109. S109 details a pad for 1000-2500 KVA. Drawing E601 indicates that the transformer is 3000 KVA. Do you want a 3000 KVA transformer or a 2500 KVA concrete pad?

R 31. Transformer size is 3000 KVA. Provide a 3000 KVA transformer pad. See this amendment.

Q 32. Specifications section 16770, Radio and public Address System, Part 3.3.2 makes reference to an antenna for which grounding is required. What is the location of this antenna and what (if any) other electrical or systems work is required for its operation?

R 32. Delete references to antenna in specifications 16770 "Radio and Public Address System" para3.2. The antenna is not required for the project.

Q 33. Drawing E110 shows a 500 kcmil in 53 mm conduit to the electric service ground and refers to sheet E504. Drawing E504 Ground entrance detail shows the 53 mm conduit with a 3/0 AWG cable? Which is correct?

R 33. Drawing E110 is correct. Electrical Service ground is 500 kcmil in 53 mm conduit. See revised drawing E504 in this amendment.

Q 34. Drawing E505 Vacuum break for detail shows 3 conduits to the double riser pole, they are labeled galvanized steel conduits.

Drawing E501 Pole riser detail shows concrete encased PVC in the ground.

Drawing E001 general note 4 says if GRS is below ground it shall be GRS - PVC Coated 400 mill.

Is the conduit below ground:

- A) PVC encased
- B) GRS encased
- C) PVC Coated GRS Encased
- D) PVC Coated GRS not Encased

Does the note on E001 apply to conduits encased in concrete or just in contact with the ground?

R 34. Conduit below ground shall be PVC coated rigid galvanized steel type. In addition, concrete reinforced duct bank shall be provided under roads, driveways, and parking lots (E-401 General Note 5). PVC Conduit encased in concrete shall be provided for the primary conduits and PVC coated RGS for the secondary conduits of the 3000 KVA transformer.

Q 35. Is there a specification for the security system detailed on drawing T-401?

R 35. Security systems requirements and operations as per drawing T-401 and notes shown. Security control panel is sole sourced as Advantor Corp (manufacturers contract information as provided in Notes on referenced drawing).

Note: two (2) security control panels are required: One (1) for an internal door access alert and the other for the external door access alert as described in Notes on drawing T-401.

Q 36. Structural Plans – please fill in missing beam designations at all locations, many beams left blank.

R 36. See this amendment.

Q 37. Structural Plans – please fill in missing joist designations at roof.

R 37. See this amendment.

Q 38. Structural Plans – please provide edge of slab details. There are no sections identifying any extra plates, angles, kickers, etc.

R 38. See architectural drawings.

Q 39. The following specification sections are listed in the table of contents but not provided in the specification book – 08700, 10260, 10430, 10910, 11162, 12390, 12540, and 13121.

R 39.

08700 Builders Hardware. See this amendment section 08170 Door Hardware.

10260 Wall & Corner Protection will not be issued.

10430 Exterior Signage. See this amendment.

10910 Projection Screen. See this amendment section 10100.

11162A Loading Dock Leveler. See this amendment.

12390 Cabinets and Cabinet Tops. See this amendment section 12320.

12540 Window Blinds, Shades, and Drapery Hardware. See this amendment section 12490 Window Treatment.

13121 Metal Building System (Minor Requirements) will not be issued.

Q 40. Addenda 1, Section 01450, page 3, item 1.4.1 refers to specification section 01000 scope of work. This section is omitted from the specifications. Please provide clarification.

R 40. See section 00600.

Q 41. Please provide specification for metal siding on guard tower.

R 41. Guard House. 26 Gauge.

Q 42. Please provide specification for fire extinguisher cabinet at guard tower.

R 42. See this amendment section 10999.

Q 43. Where are the fire extinguisher cabinets shown in details on sheet A-502 located? Not shown on plan views, please clarify.

R 43. Provide two (2) fire extinguisher cabinets with 10 pound ABC, located near the doors.

Q44. The following columns do not appear on this structural steel column schedule (drawing no. S-111), L-11, K-11, G-1, G-4, G-5, and G-6. Please advise the size of these columns. Also, none of the column base plates have been sized.

R 44. Column Line F has 1, 4, 5, 6.

Column Line G has 16, 17, 18, 21.

There are no columns G-1, G-4, G-5, and G-6.

Columns L-11 and K-11 are not columns to footings below slab. Details provided in this amendment.

Q 45. Reference is made to structural drawing S –104.

There are several beams on this drawing with no beam size designated. We direct your attention to those beams on columns lines 4, 8, 11, 14, 18, and 19. We are assuming that these are all beams because moment connections are indicated.

Please advise what beam sizes are required on these column lines. The same question applies to beams in similar locations on the mezzanine floor framing plan, S-105, and roof framing plan, S-106.

R 45. Beam sizes provided in this amendment.

Q 46. Many of the details on drawings A101, A102, and so on are shown as "0/A000." Please clarify which details is appropriate to each item.

R 46. See this amendment.

Q 47. There are 180 seats in the two conference rooms on the first floor,. Is the contractor to provide these seats? If so, please provide information on the desired product.

R 47. Yes, these seats are part of the project.

Q 48. On drawing “ “ , with the enlargements of the men’s and women’s bathrooms, please provide a drawing number and correct scale.

R 48. See this amendment drawing A-901.

Q 49. On drawing C-1, there is a “relocated sign“ (see grid B-9). Where is that sign originating from?

R 49. Sign is from the existing Battle Simulation Center Bldg 682. See demolition drawings.

Q 50. Is there a specification requirement for the chain link fence to be placed around both parking areas?

R 50. See this amendment section 02821.

Q.51 there is a note on drawings LS-110, LS-111, and LS-112 stating all information on these drawings is shown elsewhere. I have not found FEC and FE found on other drawings. Are the fire extinguishers and cabinets part of this contract? Are fire extinguishers required at each fire extinguisher cabinet? Also, we would need specifications for the fire extinguishers and cabinets.

A 51. Fire extinguishers and cabinets are part of this contract.

Fire extinguishers are required at each fire extinguisher cabinet.

See this amendment section 10999 para 2.1. Fire extinguishers shall be 10 pound ABC.

Q 52. Q 52. Drawing A-102 refers to detail C/A-802. Presently, we do not have a drawing A-802. We do have a drawing without a sheet reference number, which shows toilet room layouts. Please advise if this drawing is drawing A-802. Also please provide detail C/A-802 showing stair #5 plan details.

A 52. See this amendment for drawing A-802. Drawing without a reference number showing toilet room layouts is drawing A-901 in this amendment.

Q 53. Is a closet shelf required at Room 104/A?

A. 53. Yes.

Q. 54. Please review and advise:

- a. What should the door designation for the north door at Room 101 be?
- b. Door 174 at Room 136 does not appear on the door schedule.
- c. Door 000 at Room 228 does not appear on the door schedule.
- d. Door 212 at Room 237 does not appear on the door schedule.
- e. Doors 122, 209, and 210 appear on the door schedule but not on the plans.

R 54.

- a. The north door at Room 101 is not a door. It is an Information Window. See drawing A-603 in this amendment.
- b. Door designation should be 104.
- c. Door designation should be 203.
- d. Door designation should be 210.
- e. Door designation 130 on drawing A-101 should be 122. Door designation 209 is not used. Door designation 212 on drawing A-102 should be 210.

Q 55. Toilet accessories types are scheduled for each toilet room; however, quantity of toilet accessories is not shown. Please advise quantity per room.

A. 55. See this amendment revised section 10800A.

This Amendment shall be attached to the specifications and shall be a part thereof.

Incl.

ELLA SNELL
CONTRACTING OFFICER
CONTRACTING

Changes in Section 00600

The following clauses which are incorporated by full text have been added or modified:

252.209-7003 COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (MAR 1998)

By submission of its offer, the offeror represents that, if it is subject to the reporting requirements of 37 U.S.C. 4212(d) (i.e., the VETS-100 report required by Federal Acquisition Regulation clause 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era), it has submitted the most recent report required by 38 U.S.C. 4212(d).

Changes in Section 00700

The following clauses which are incorporated by full text have been added or modified:

252.232-7007 LIMITATION OF GOVERNMENT'S OBLIGATION (AUG 1993)

(a) Contract line item(s) 0001 through 0025 are incrementally funded. For these item(s), the sum of \$ 10,000,000.00 of the total price is presently available for payment and allotted to this contract. An allotment schedule is set forth in paragraph (i) of this clause.

(b) For item(s) identified in paragraph (a) of this clause, the Contractor agrees to perform up to the point at which the total amount payable by the Government, including reimbursement in the event of termination of those item(s) for the Government's convenience, approximates the total amount currently allotted to the contract. The Contractor will not be obligated to continue work on those item(s) beyond that point. The Government will not be obligated in any event to reimburse the Contractor in excess of the amount allotted to the contract for those item(s) regardless of anything to the contrary in the clause entitled "TERMINATION FOR THE CONVENIENCE OF THE GOVERNMENT." As used in this clause, the total amount payable by the Government in the event of termination of applicable contract line item(s) for convenience includes costs, profit and estimated termination settlement costs for those item(s).

(c) Notwithstanding the dates specified in the allotment schedule in paragraph (i) of this clause, the Contractor will notify the Contracting Officer in writing at least ninety days prior to the date when, in the Contractor's best judgment, the work will reach the point at which the total amount payable by the Government, including any cost for termination for convenience, will approximate 85 percent of the total amount then allotted to the contract for performance of the applicable item(s). The notification will state (1) the estimated date when that point will be reached and (2) an estimate of additional funding, if any, needed to continue performance of applicable line items up to the next scheduled date for allotment of funds identified in paragraph (i) of this clause, or to a mutually agreed upon substitute date. The notification will also advise the Contracting Officer of the estimated amount of additional funds that will be required for the timely performance of the item(s) funded pursuant to this clause, for subsequent period as may be specified in the allotment schedule in paragraph (i) of this clause, or otherwise agreed to by the parties. If after such notification additional funds are not allotted by the date identified in the Contractor's notification, or by an agreed substitute date, the Contracting Officer will terminate any item(s) for which additional funds have not been allotted, pursuant to the clause of this contract entitled "TERMINATION FOR THE CONVENIENCE OF THE GOVERNMENT".

(d) When additional funds are allotted for continued performance of the contract line item(s) identified in paragraph (a) of this clause, the parties will agree as to the period of contract performance which will be covered by the funds. The provisions of paragraph (b) through (d) of this clause will apply in like manner to the additional allotted funds and agreed substitute date, and the contract will be modified accordingly.

(e) If, solely by reason of failure of the Government to allot additional funds, by the dates indicated below, in amounts sufficient for timely performance of the contract line item(s) identified in paragraph (a) of this clause, the Contractor incurs additional costs or is delayed in the performance of the work under this contract and if additional funds are allotted, an equitable adjustment will be made in the price or prices (including appropriate target, billing, and ceiling prices where applicable) of the item(s), or in the time of delivery, or both. Failure to agree to any such equitable adjustment hereunder will be a dispute concerning a question of fact within the meaning of the clause entitled "disputes."

(f) The Government may at any time prior to termination allot additional funds for the performance of the contract line item(s) identified in paragraph (a) of this clause.

(g) The termination provisions of this clause do not limit the rights of the Government under the clause entitled "DEFAULT." The provisions of this clause are limited to work and allotment of funds for the contract line item(s) set forth in paragraph (a) of this clause. This clause no longer applies once the contract is fully funded except with regard to the rights or obligations of the parties concerning equitable adjustments negotiated under paragraphs (d) or (e) of this clause.

(h) Nothing in this clause affects the right of the Government to this contract pursuant to the clause of this contract entitled "TERMINATION FOR CONVENIENCE OF THE GOVERNMENT."

(i) The parties contemplate that the Government will allot funds to this contract in accordance with the following schedule:

On execution of contract.....\$10,000,000.00
month 09 day, 30 year 2002\$Remainder of contract value

(End of clause)

SECTION 01570

LEAD SAMPLING AND TESTING FORT DRUM, NEW YORK

1.0 BACKGROUND

Due to the Facilities Reduction Program (FRP) Fort Drum has cited an additional 24 buildings on the facility, which will be demolished. All buildings selected for demolition were constructed in the 1940's. It was believed that lead based paint was used on the exterior of the buildings. Because of the potential lead-based paint being used on the buildings, an initial sampling of the buildings for lead was conducted. Some buildings were sampled and tested for lead using the EPA SW-846 method 1311 using the Toxic Characteristic Leaching Procedure for extraction. The results not only showed that lead was present, but also showed that all building samples failed the TCLP requirements of 5 mg/L leachable lead for disposal in a sanitary landfill.

The objective of this SOW is to collect and sample a representative sample of the actual building debris by weight to determine if the buildings should be treated as hazardous waste.

2.0 STATEMENT OF SERVICES

The Contractor will be responsible for the following:

1. Supplying all personnel, equipment, and containers to sample and analyze 24 buildings, which are cited for demolition for lead using EPA SW-846 method 1311 with TCLP extraction procedures.
2. Decontamination procedures used for the sampling equipment.
3. Proposed disposal of all Investigative Derived Materials (IDM), i.e., wash from decontamination procedures, etc., and prior to disposal notify Fort Drum of the method of disposal chosen for the materials.
4. Shipment of all samples with the chain of custody to the laboratory, conforming to all pertinent shipping regulations.
5. Supply power generator for equipment.
6. Actual drill type used and decontamination procedures for the drill.

3.0 TECHNICAL APPROACH

3.1 Prior to Field Work

The Contractor shall meet with a representative of Baltimore District Corps of Engineers and a representative from Fort Drum to discuss field activities.

3.2 Field Investigation

The Contractor shall implement the following sampling plan with oversight from Fort Drum representatives:

- a. Core samples will be collected from areas as indicated on the Bid Schedule. The samples will be collected using a heavy duty 2-inch diameter, 14-inch long bit, which is impregnated with diamond on the surface and imbedded in the metal.
- b. A core from the floor, wall, roof, and partition (where applicable) will be taken and composited by weight of material in the building (proportion of weight for each building will be determined by Contractor). General locations of the core samples will be determined by Contractor. Contractor will coordinate with the occupants of any occupied building prior to sampling and all bore holes shall be repaired.
- c. Decontamination procedures will be used between the sampling of each building.
- d. Equipment blanks will be taken at a minimum of once a day.
- e. Samples will be packed in a plastic container and shipped in accordance with all pertinent shipping regulations. Samples do not need to be chilled.
- f. A matrix spike/matrix spike duplicate sample will be collected every 20 samples, with actual building specified for the MS/MSD before sampling event by Fort Drum.
- g. Field duplicates will be collected approximately every 20 samples. Actual samples designated as duplicates will be determined by Fort Drum before the sampling event.
- h. Samples will be labeled with a letter specifying the type of sample taken by the building number. The following letters will be used:

C = Composite

D = Field Duplicate

M = MS/MSD

The total number of samples is to be based on the bid schedule.

Composite

MS/MSD

Equipment Blanks

Duplicates

TOTAL

3.3 Chemical Analysis

With the exception of equipment blanks, all samples will be analyzed using EPA SW-846 method 1311 for leachable lead using TCLP extraction procedures by an ELAP certified laboratory. Equipment blanks do not need to go through the TCLP extraction process. A seven day turnaround times is requested for initial results, with requested QA material in a report to follow within one week of receiving the initial sample results.

It may be requested that Fort Drum and Corps representatives visit the laboratory during sample analysis.

3.4 Utility Clearances

The Contractor will be responsible for all utility clearances.

3.5 Site Problem Resolution

Any problems encountered during sampling will be communicated to the Contracting Officer and to the designated Fort Drum Point of Contact.

3.6 Deliverables

1. Site Health and Safety Plan (previously approved plan will be amended by letter to include additional buildings).
2. Copies of field notes.
3. Summary of field activities.
4. Initial laboratory results reported in mg/L.
5. Data package including the following:
 - a. raw data from GFAA
 - b. preparation logs and notes

- c. sample calculations
- d. summary of data reported in mg/L
- e. summary, including matrix spike amounts, port digestion spike amounts, any QC problems encountered during analysis, dates samples were received, and any other information pertinent to samples.
- f. have available at the laboratory for viewing upon request QC data relevant to samples (i.e., calibration, standards, etc.)

4.0 SCHEDULE

The Contractor shall complete all field work within one month of the Notice to Proceed, and submit a draft report of the test results four (4) weeks after completion of the field effort. As sample results become available, they will be forwarded to the designated Fort Drum Point of Contact.

5.0 DISTRIBUTION OF DELIVERABLES

Provide to Contracting Officer.

- End of Section -

SECTION 01580

LEAD-BASED PAINT ABATEMENT OF WORLD WAR II STRUCTURES FORT DRUM, NEW YORK

1.0 BACKGROUND

The Fort Drum Military Installation is an active facility in upstate New York that is currently headquarters to the 10th Mountain Division. It is located approximately 10 miles northeast of Watertown, New York and 25 miles southeast of the U.S./Canadian border. The installation provides training facilities and services for the 10th Mountain Division, U.S. Army National Guard, and other Army forces that require land and air space for firing range practice, other combat skills practice, and cold weather training. The population associated with Fort Drum is approximately 31,000 people, including military personnel, dependents, and a civilian workforce.

1.1 As part of the Facility Reduction Program, Fort Drum has identified structures to be demolished. Fort Drum has requested support to abate lead-based paint (LBP) on World War II (WWII) structures, which have been certified for demolition. These structures have previously sampled according to a protocol agreed upon by the New York State Department of Environmental Conservation (NYSDEC) and Fort Drum. This scope of work requires abatement of the exterior wood of identified structures using a wet blast method in compliance with all federal, state, and local laws. Post-abatement verification sampling shall be required. Following abatement, these structures shall be demolished by another Contractor.

2.0 OBJECTIVE

The objectives are:

- a. Prepare and submit a report in work plan format containing a Health and Safety Plan Addendum and response to comments.
- b. Abate exterior LBP from WWII structures using a wet blast method.
- c. Prepare and submit a summary report.

3.0 TASKS

3.1 Task 1

The Contractor shall prepare and submit for approval by the contracting Officer and Fort Drum a work plan documenting proposed abatement protocols using a wet blast method for the abatement and a schedule for implementation. A Health and Safety Plan

Addendum shall also be submitted as part of this plan. The work plan shall be submitted within 15 business days of issuance of the Notice to Proceed.

If required a letter response to comments shall be submitted within 10 business days of receipt of USACE and Fort Drum comments.

The Contractor shall also coordinate with the Engineering Division and Environmental Division of the Fort Drum Department of Public Works (PW).

3.2 Task 2

The Contractor shall abate LBP from the exterior wood of two structures using a wet blast method. The Contractor is responsible for appropriately containing air emission related to work effort to include air and debris to ground and shall be responsible for any necessary cleanup and abatement of uncontained wastes. Appropriate environmental controls and protective containment (poly) in work areas shall be required. If structures have exterior metal siding covering the wood surface, the metal shall be removed and staged in an area designated by Fort Drum personnel. Disposition of metal siding shall be handled by Fort Drum.

The list of structures to be abated is as indicated on the bid schedule.

The Contractor shall take confirmatory composite samples of surfaces abated. Samples shall be analyzed for TCLP lead only according to EPA SW-846 as approved. One composite sample per each abated side per building shall be collected and analyzed (minimum four (4) samples per building). For estimating purposes assume a total of 10 samples shall be required with a maximum of 7-day turnaround time. The Contractor shall continue to abate structures that fail confirmatory sampling and shall be required to re-sample after each effort until abatement is complete and confirmatory analysis is below the regulatory level. Re-samples shall be taken and analyzed with next-day turnaround time. Contractor shall hand scrape surface, if required, in order to complete effort.

The Contractor shall obtain any necessary permits, licenses, or authorizations as may be required by Fort Drum, state, federal or local agencies.

The Contractor is responsible for disposal of all wastes generated under this work effort, i.e., drums/containers containing wet blast materials, PPE, poly, etc. in accordance with all state, federal, and local regulations. The Contractor shall handle and provide appropriate containers to store and manage wastes generated and storage will be coordinated with Fort Drum PW, Environmental Division. All wastes shall be properly sampled for waste disposal characterization and all analysis documentation shall be supplied to PW, Environmental Division. Disposal shall be coordinated with PW, Environmental Division. Copies of all disposal facility's permits shall be supplied to PW, Environmental Division prior to disposal along with copies of all wastes manifests.

For estimating purposes assume three samples will be required (one for each structure's wet blast media and one for miscellaneous debris).

All Contractor personnel shall wear appropriate personnel protective equipment.

All Contractor employees who are involved with LBP work shall be required to certify they have received medical examinations and will continue to receive medical surveillance to include biological monitoring as required by 29 CFR Part 1926 and by any relevant state and local regulations. Records shall be retained, at the Contractor's expense, in accordance with 29 CFR Part 1910.

Training certifications shall be provided prior to the start of work involving LBP abatement for all the works and supervisors. Training shall meet the requirements of 29 CFR Part 1926.62 and 49 CFR Part 172 as applicable and all state and local regulations. Training shall be provided prior to the time of job assignment and will cover the abatement method used and personnel protection as necessary. Copies of medical and training certifications shall be provided to Fort Drum PW, Environmental Division prior to start of fieldwork.

3.3 Task 3

The Contractor shall prepare and submit, for approved by the Contracting Officer and Fort Drum, a draft and final summary report which will document all activities performed, post-abatement analysis results, and disposal documentation. Photographic documentation of field efforts shall be included in the final summary report. The final summary report shall be issued fifteen (15) business days after receipt of comments, incorporating comments and responses.

4.0 DELIVERABLES

The Contractor shall submit the following deliverables as defined in the Review Distribution list in Table 1:

- Work plan with Health and Safety Addendum
- Letter Responses to comments, if required
- Draft Summary Report
- Final Summary Report

5.0 SCHEDULE

Work shall proceed in accordance with the following schedule:

<u>Work Item</u>	<u>Due Date</u>
Submit Work plan	15 business days from Notice to Proceed
Submit Letter Response, if required	10 business days from receipt of comments

Mobilization	Immediately upon approval of work plan
Submit Draft Summary Report	15 business days after demobilization
Submit Final Summary Report	15 business days after receipt of comments

Note: An aggressive schedule will be required in order to complete field effort prior to winter at Fort Drum.

- End of Section -

SECTION 02821

FENCING

04/99

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 116	(1995) Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric
ASTM A 121	(1999) Zinc-Coated (Galvanized) Steel Barbed Wire
ASTM A 153/A 153M	(1998) Zinc-Coated (Hot Dip) on Iron and Steel Hardware
ASTM A 176	(1999) Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip
ASTM A 392	(1996) Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A 478	(1997) Chromium-Nickel Stainless Steel Weaving and Knitting Wire
ASTM A 491	(1996) Aluminum-Coated Steel Chain-Link Fence Fabric
ASTM A 585	(1997) Aluminum-Coated Steel Barbed Wire
ASTM A 666	(1999) Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
ASTM A 702	(1989; R 1994e1) Steel Fence Posts and Assemblies, Hot Wrought
ASTM A 780	(1993a) Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings
ASTM A 824	(1995) Metallic-Coated Steel Marcellled Tension Wire for Use With Chain Link Fence
ASTM C 94/C 94M	(2000) Ready-Mixed Concrete
ASTM D 4541	(1995e1) Pull-Off Strength of Coatings Using Portable Adhesion Testers

ASTM F 626	(1996a) Fence Fittings
ASTM F 668	(1999a) Poly(Vinyl Chloride) (PVC)-Coated Steel Chain-Link Fence Fabric
ASTM F 883	(1997) Padlocks
ASTM F 900	(1994) Industrial and Commercial Swing Gates
ASTM F 1043	(1999) Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework
ASTM F 1083	(1997) Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F 1184	(1994) Industrial and Commercial Horizontal Slide Gates
ASTM F 1664	(1995) Specification for Poly(Vinyl Chloride)(PVC)-Coated Steel Tension Wire Used with Chain-Link Fence
ASTM G 23	(1996) Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials
ASTM G 26	(1996) Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials
ASTM G 53	(1996) Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C1	(1997) All Timber products - Preservative Treatment by Pressure Processes
AWPA C4	(1995) Poles - Preservative Treatment by Pressure Processes

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Chain Link Fence; FIO

Statement, signed by an official authorized to certify on behalf of the manufacturer, attesting that the chain link fence and component materials meet the specified requirements.

PART 2 PRODUCTS

2.1 FENCE FABRIC

Fence fabric shall conform to the following:

2.1.1 Chain Link Fence Fabric

ASTM A 392, Class 1, zinc-coated steel wire with minimum coating weight of 370 grams (1.2 ounces) of zinc per square meter (foot) of coated surface, or ASTM A 491, Type I, aluminum-coated steel wire. Fabric height shall be 1.8 m (6 feet). Fabric shall be twisted and barbed on the top selvage and knuckled on the bottom selvage.

2.2 GATES

ASTM F 900 and/or ASTM F 1184. Gate shall be the type and swing shown. Gate frames shall conform to strength and coating requirements of ASTM F 1083 for Group IA, steel pipe, with external coating Type A, nominal pipe size (NPS) 1-1/2. Gate frames shall conform to strength and coating requirements of ASTM F 1043, for Group IC, steel pipe with external coating Type A or Type B, nominal pipe size (NPS) 1-1/2. Gate fabric shall be as specified for chain link fabric. Gate leaves more than 2.44 m (8 feet) wide shall have either intermediate members and diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist. Gate leaves less than 2.44 m (8 feet) wide shall have truss rods or intermediate braces. Intermediate braces shall be provided on all gate frames with an electro-mechanical lock. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding will not be permitted. Latches, hinges, stops, keepers, rollers, and other hardware items shall be furnished as required for the operation of the gate. Latches shall be arranged for padlocking so that the padlock will be accessible from both sides of the gate. Stops shall be provided for holding the gates in the open position. Each end member of gate frames shall be extended sufficiently above the top member to carry three strands of barbed wire in horizontal alignment with barbed wire strands on the fence.

2.3 POSTS

2.3.1 Metal Posts for Chain Link Fence

ASTM F 1083, zinc-coated. Group IA, with external coating Type A steel pipe. Sizes shall be as shown on the drawings. Line posts and terminal (corner, gate, and pull) posts selected shall be of the same designation throughout the fence. Gate post shall be for the gate type specified subject to the limitation specified in ASTM F 900 and/or ASTM F 1184.

2.4 BRACES AND RAILS

ASTM F 1083, zinc-coated, Group IA, steel pipe, size NPS 1-1/4.

2.5 WIRE

2.5.1 Tension Wire

Tension wire shall be Type I or Type II, Class 2 coating, in accordance with ASTM A 824.

2.6 ACCESSORIES

ASTM F 626. Ferrous accessories shall be zinc or aluminum coated. Truss rods shall be furnished for each terminal post. Truss rods shall be provided with turnbuckles or other equivalent provisions for adjustment. Barbed wire shall be 3 strand, 12-1/2 gauge wire, zinc-coated, Class 3 in accordance with ASTM A 121 or aluminum coated Type I in accordance with ASTM A 585. Barbed wire shall be four-point barbed type steel wire. Barbed wire support arms shall be the single arm type and of the design required for the post furnished. Tie wire for attaching fabric to rails, braces, and posts shall be 9 gauge steel wire and match the coating of the fence fabric. Tie wires for attaching fabric to tension wire on high security fences shall be 1.6 mm (16 gage) stainless steel. The tie wires shall be a double loop and 165 mm (6.5 inches) in length. Miscellaneous hardware coatings shall conform to ASTM A 153/A 153M unless modified.

2.7 CONCRETE

ASTM C 94/C 94M, using 19 mm (3/4 inch) maximum size aggregate, and having minimum compressive strength of 21 MPa (3000 psi) at 28 days. Grout shall consist of one part portland cement to three parts clean, well-graded sand and the minimum amount of water to produce a workable mix.

2.8 PADLOCKS

Padlocks shall conform to ASTM F 883, Type PO1, Option A, Grade 6. EPB, Size 44 mm (1-3/4 inch). All padlocks shall be keyed alike. All padlocks shall be keyed into master key system as specified in Section 08710 BUILDERS' HARDWARE.

PART 3 EXECUTION

3.1 INSTALLATION

Fence shall be installed to the lines and grades indicated. The area on either side of the fence line shall be cleared to the extent indicated. Line posts shall be spaced equidistant at intervals not exceeding 3 m (10 feet). Terminal (corner, gate, and pull) posts shall be set at abrupt changes in vertical and horizontal alignment. Fabric shall be continuous between terminal posts; however, runs between terminal posts shall not exceed 152.4 m (500 feet). Any damage to galvanized surfaces, including welding, shall be repaired with paint containing zinc dust in accordance with ASTM A 780.

3.2 EXCAVATION

Post holes shall be cleared of loose material. Waste material shall be spread where directed. The ground surface irregularities along the fence line shall be eliminated to the extent necessary to maintain a 25 mm (1 inch) clearance between the bottom of the fabric and finish grade.

3.3 POST INSTALLATION

3.3.1 Posts for Chain Link Fence

Posts shall be set plumb and in alignment. Except where solid rock is

encountered, posts shall be set in concrete to the depth indicated on the drawings. Where solid rock is encountered with no overburden, posts shall be set to a minimum depth of 457 mm (18 inches) in rock. Where solid rock is covered with an overburden of soil or loose rock, posts shall be set to the minimum depth indicated on the drawing unless a penetration of 457 mm (18 inches) in solid rock is achieved before reaching the indicated depth, in which case depth of penetration shall terminate. All portions of posts set in rock shall be grouted. Portions of posts not set in rock shall be set in concrete from the rock to ground level. Posts set in concrete shall be set in holes not less than the diameter shown on the drawings. Diameters of holes in solid rock shall be at least 25 mm (1 inch) greater than the largest cross section of the post. Concrete and grout shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete and grout shall be allowed to cure for 72 hours prior to attachment of any item to the posts. Fence post rigidity shall be tested by applying a 222.4 newtons (50 pound) force on the post, perpendicular to the fabric, at 1.52 m (5 feet) above ground; post movement measured at the point where the force is applied shall be less than or equal to 19 mm (3/4 inch) from the relaxed position; every tenth post shall be tested for rigidity; when a post fails this test, further tests on the next four posts on either side of the failed post shall be made; all failed posts shall be removed, replaced, and retested at the Contractor's expense.

3.4 RAILS

3.4.1 Bottom Rail

The bottom rail shall be bolted to double rail ends and double rail ends shall be securely fastened to the posts. Bolts shall be peened to prevent easy removal. Bottom rail shall be installed before chain link fabric.

3.5 BRACES AND TRUSS RODS

Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal. No bracing is required on fences 1.83 m (6 feet) high or less if a top rail is installed.

3.6 TENSION WIRES

Tension wires shall be installed along the top of the fence line and attached to the terminal posts of each stretch of the fence. Top tension wires shall be installed within the top 102 mm (4 inches) of the installed fabric. Tension wire shall be pulled taut and shall be free of sag.

3.7 CHAIN LINK FABRIC

Chain link fabric shall be installed on the side of the post indicated. Fabric shall be attached to terminal posts with stretcher bars and tension bands. Bands shall be spaced at approximately 381 mm (15 inch) intervals. The fabric shall be installed and pulled taut to provide a smooth and uniform appearance free from sag, without permanently distorting the fabric diamond or reducing the fabric height. Fabric shall be fastened to line posts at approximately 381 mm (15 inch) intervals and fastened to all rails and tension wires at approximately 305 mm (12 inches) intervals. Fabric shall be cut by untwisting and removing pickets. Splicing shall be

accomplished by weaving a single picket into the ends of the rolls to be joined. The bottom of the installed fabric shall be 25 mm (1 inch) plus or minus 13 mm (1/2 inch) above the ground. After the fabric installation is complete, the fabric shall be exercised by applying a 222 newtons (50 pound) push-pull force at the center of the fabric between posts; the use of a 133 newtons (30 pound) pull at the center of the panel shall cause fabric deflection of not more than 63.5 mm (2-1/2 inches) when pulling fabric from the post side of the fence; every second fence panel shall meet this requirement; all failed panels shall be resecured and retested at the Contractor's expense.

3.8 BARBED WIRE SUPPORTING ARMS AND BARBED WIRE

3.8.1 General Requirements

Barbed wire supporting arms and barbed wire shall be installed as indicated and as recommended by the manufacturer. Supporting arms shall be anchored with 9.5 mm (3/8 inch) diameter plain pin rivets. Barbed wire shall be pulled taut and attached to the arms with clips or other means that will prevent easy removal.

3.9 GATE INSTALLATION

Gates shall be installed at the locations shown. Latches, stops, and keepers shall be installed as required. Slide gates shall be installed as recommended by the manufacturer. Padlocks shall be attached to gates or gate posts with chains. Hinge pins, and hardware shall be welded or otherwise secured to prevent removal.

3.10 GROUNDING

Fences shall be grounded on each side of all gates, at each corner, at the closest approach to each building located within 15 m (50 feet) of the fence, and where the fence alignment changes more than 15 degrees. Grounding locations shall not exceed 198 m (650 feet). Each gate panel shall be bonded with a flexible bond strap to its gate post. Fences crossed by powerlines of 600 volts or more shall be grounded at or near the point of crossing and at distances not exceeding 45 m (150 feet) on each side of crossing. Ground conductor shall consist of No. 8 AWG solid copper wire. Grounding electrodes shall be 19 mm (3/4 inch) by 3.05 m (10 foot) long copper-clad steel rod. Electrodes shall be driven into the earth so that the top of the electrode is at least 152 mm (6 inches) below the grade. Where driving is impracticable, electrodes shall be buried a minimum of 305 mm (12 inches) deep and radially from the fence. The top of the electrode shall be not less than 610 mm (2 feet) or more than 2.4 m (8 feet) from the fence. Ground conductor shall be clamped to the fence and electrodes with bronze grounding clamps to create electrical continuity between fence posts, fence fabric, and ground rods. After installation the total resistance of fence to ground shall not be greater than 25 ohms.

-- End of Section --

SECTION 08710

DOOR HARDWARE

09/99

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 283 (1991) Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

ASTM F 883 (1990) Padlocks

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.1 (1997) Butts and Hinges (BHMA 101)

ANSI/BHMA A156.2 (1996) Bored and Preassembled Locks and Latches (BHMA 601)

ANSI/BHMA A156.3 (1994) Exit Devices (BHMA 701)

ANSI/BHMA A156.4 (1992) Door Controls - Closers (BHMA 301)

ANSI/BHMA A156.5 (1992) Auxiliary Locks & Associated Products (BHMA 501)

ANSI/BHMA A156.6 (1994) Architectural Door Trim (BHMA 1001)

ANSI/BHMA A156.7 (1988) Template Hinge Dimensions

ANSI/BHMA A156.8 (1994) Door Controls - Overhead Holders (BHMA 311)

ANSI/BHMA A156.12 (1992) Interconnected Locks & Latches (BHMA 611)

ANSI/BHMA A156.13 (1994) Mortise Locks & Latches (BHMA 621)

ANSI/BHMA A156.15 (1995) Closer Holder Release Devices

ANSI/BHMA A156.16 (1997) Auxiliary Hardware

ANSI/BHMA A156.18 (1993) Materials and Finishes (BHMA 1301)

ANSI/BHMA A156.21 (1996) Thresholds

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80 (1999) Fire Doors and Fire Windows

NFPA 101 (1997) Life Safety Code

STEEL DOOR INSTITUTE (SDOI)

ANSI/SDI 100 (1991) Standard Steel Doors and Frames

UNDERWRITERS LABORATORIES (UL)

UL BMD (1999) Building Materials Directory

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-02 Shop Drawings

Hardware schedule; G, RE

Keying system; FIO

SD-03 Product Data

Hardware items; G, RE

SD-08 Manufacturer's Instructions

Installation; FIO

SD-10 Operation and Maintenance Data

Hardware Schedule items, Data Package 1

Submit data package in accordance with Section 01781N, "Operation and Maintenance Data."

SD-11 Closeout Submittals

Key bitting, FIO

1.3 HARDWARE SCHEDULE

Prepare and submit hardware schedule in the following form:

Hard- ware Item	Quan- tity	Size	Reference Publi- cation Type No.	Finish	Mfr. Name and Catalog No.	Key Con- trol Symbols	UL Mark (If fire rated and listed)	ANSI/BHMA Finish Designa- tion
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1.4 KEY BITTING CHART REQUIREMENTS

Submit key bitting charts to the Contracting Officer prior to completion of the work. Include:

- Complete listing of all keys (AA1, AA2, etc.).

- b. Complete listing of all key cuts (AA1-123456, AA2-123458).
- c. Tabulation showing which key fits which door.
- d. Copy of floor plan showing doors and door numbers.
- e. Listing of 20 percent more key cuts than are presently required in each master system.

1.5 QUALITY ASSURANCE

1.5.1 Hardware Manufacturers and Modifications

Provide, as far as feasible, locks, hinges, and closers of one lock, hinge, or closer manufacturer's make. Modify hardware as necessary to provide features indicated or specified.

1.6 DELIVERY, STORAGE, AND HANDLING

Deliver hardware in original individual containers, complete with necessary appurtenances including fasteners and instructions. Mark each individual container with item number as shown in hardware schedule. Deliver permanent keys and removable cores to the Contracting Officer, either directly or by certified mail. Deliver construction master keys with the locks.]

PART 2 PRODUCTS

2.1 TEMPLATE HARDWARE

Hardware to be applied to metal or to prefinished doors shall be made to template. Promptly furnish template information or templates to door and frame manufacturers. Template hinges shall conform to ANSI/BHMA A156.7. Coordinate hardware items to prevent interference with other hardware.

2.2 HARDWARE FOR FIRE DOORS AND EXIT DOORS

Provide all hardware necessary to meet the requirements of NFPA 80 for fire doors and NFPA 101 for exit doors, as well as to other requirements specified, even if such hardware is not specifically mentioned under paragraph entitled "Hardware Schedule." Such hardware shall bear the label of Underwriters Laboratories, Inc., and be listed in UL BMD or labeled and listed by another testing laboratory acceptable to the Contracting Officer.

2.3 HARDWARE ITEMS

Hinges, pivots, locks, latches, exit devices, bolts, and closers shall be clearly and permanently marked with the manufacturer's name or trademark where it will be visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover.

2.3.1 Hinges

ANSI/BHMA A156.1, 114 by 114 millimeters (4-1/2 by 4-1/2 inches) unless otherwise specified. Construct loose pin hinges for exterior doors and reverse-bevel interior doors so that pins will be nonremovable when door is closed. Other antifriction bearing hinges may be provided in lieu of ball-bearing hinges.

2.3.2 Locks and Latches

2.3.2.1 Mortise Locks and Latches

ANSI/BHMA A156.13, Series 1000, Operational Grade 1, Security Grade 2. Provide mortise locks with escutcheons not less than 178 by 57 mm (7 by 2-1/4 inches) with a bushing at least 6 mm (1/4 inch) long. Cut escutcheons to suit cylinders and provide trim items with straight, beveled, or smoothly rounded sides, corners, and edges. Knobs and roses of mortise locks shall have screwless shanks and no exposed screws.

2.3.2.2 Bored Locks and Latches

ANSI/BHMA A156.2, Series 4000, Grade 1.

2.3.2.3 Combination Locks

Heavy-duty, mechanical combination lockset with five pushbuttons, standard-sized knobs, 20 mm (3/4 inch) deadlocking latch, 70 mm (2-3/4 inch) backset. Lock shall be operated by pressing two or more of the buttons in unison or individually in the proper sequence. Inside knob shall always operate the latch. Provide a keyed cylinder on the interior to permit setting the combination. Provide a keyed removable core cylinder on the exterior to permit bypassing the combination.

2.3.3 Exit Devices

ANSI/BHMA A156.3, Grade 1. Provide adjustable strikes for rim type and vertical rod devices. Provide open back strikes for pairs of doors with mortise and vertical rod devices.

2.3.4 Exit Locks With Alarm

ANSI/BHMA A156.5, Type E0431 (with full-width horizontal actuating bar) for single doors; Type E0431 (with actuating bar) or E0471 (with actuating bar and top and bottom bolts, both leaves active) for pairs of doors, unless otherwise specified. Provide terminals for connection to remote indicating panel. Provide outside control key.

2.3.5 Cylinders and Cores

Provide cylinders for new locks, including locks provided under other sections of this specification. Cylinders shall be fully compatible with products of the Best Lock Corporation and shall have interchangeable cores which are removable by a special control key. The cores shall have seven pin tumblers and shall be factory set using the A4 system and F keyway. Submit a core code sheet with the cores. The cores shall be master keyed in one system for this project. Provide construction interchangeable cores.

2.3.6 Keying System

Provide a great master keying system, an extension of the existing keying system. Existing locks were manufactured by BEST and have interchangeable cores. Provide a construction master keying system. Provide key cabinet as specified.

2.3.7 Lock Trim

Cast, forged, or heavy wrought construction and commercial plain design.

2.3.7.1 Knobs and Roses

In addition to meeting test requirements of ANSI/BHMA A156.2 and ANSI/BHMA A156.13, knobs, roses, and escutcheons shall be 1.25 mm (0.050 inch) thick if unreinforced. If reinforced, outer shell shall be 0.89 mm (0.035 inch) thick and combined thickness shall be 1.78 mm (0.070 inch), except knob shanks shall be 1.52 mm (0.060 inch) thick.

2.3.7.2 Lever Handles

Provide lever handles in lieu of knobs where specified in paragraph entitled "Hardware Schedule". Lever handles for exit devices shall meet the test requirements of ANSI/BHMA A156.13 for mortise locks. Lever handle locks shall have a breakaway feature (such as a weakened spindle or a shear key) to prevent irreparable damage to the lock when a force in excess of that specified in ANSI/BHMA A156.13 is applied to the lever handle. Lever handles shall return to within 13 mm (1/2 inch) of the door face.

2.3.8 Keys

Furnish one file key, one duplicate key, and one working key for each key change and for each master keying system. Furnish one additional working key for each lock of each keyed-alike group. Furnish six (6) construction master keys, and two (2) control keys for removable cores. Furnish a quantity of key blanks equal to 20 percent of the total number of file keys. Stamp each key with appropriate key control symbol and "U.S. property - Do not duplicate." Do not place room number on keys.

2.3.9 Door Bolts

ANSI/BHMA A156.16. Provide dustproof strikes for bottom bolts, except for doors having metal thresholds. Automatic latching flush bolts: ANSI/BHMA A156.3, Type 25.

2.3.10 Closers

ANSI/BHMA A156.4, Series C02000, Grade 1, with PT 4C. Provide with brackets, arms, mounting devices, fasteners, full size covers, except at storefront mounting, and other features necessary for the particular application. Size closers in accordance with manufacturer's recommendations, or provide multi-size closers, Sizes 1 through 6, and list sizes in the Hardware Schedule. Provide manufacturer's 10 year warranty.

2.3.10.1 Identification Marking

Engrave each closer with manufacturer's name or trademark, date of manufacture, and manufacturer's size designation located to be visible after installation.

2.3.11 Overhead Holders

ANSI/BHMA A156.8.

2.3.12 Closer Holder-Release Devices

ANSI/BHMA A156.15.

2.3.13 Door Protection Plates

ANSI/BHMA A156.6.

2.3.13.1 Sizes of Mop, and Kick Plates

Width for single doors shall be 50 mm (2 inches) less than door width; width for pairs of doors shall be 25 mm (one inch) less than door width. Height of kick plates shall be 250 mm (10 inches) for flush doors and 25 mm (one inch) less than height of bottom rail for panel doors. Height of mop plates shall be 150 mm (6 inches).

2.3.14 Door Stops and Silencers

ANSI/BHMA A156.16. Silencers Type L03011. Provide three silencers for each single door, two sets for each pair. Provide door stop L02251 or L02131, as applicable, for each door.

2.3.15 Padlocks

ASTM F 883.

2.3.16 Thresholds

ANSI/BHMA A156.21. Use J35100, with vinyl or silicone rubber insert in face of stop, for exterior doors opening out, unless specified otherwise.

2.3.17 Weather Stripping

A set shall include head and jamb seals, sweep strips, and, for pairs of doors, astragals. Air leakage of weather stripped doors shall not exceed 2.19×10^{-5} cms (0.5 cubic feet per minute) per minute of air per square meter (foot) of door area when tested in accordance with ASTM E 283. Weather stripping shall be one of the following:

2.3.17.1 Extruded Aluminum Retainers

Extruded aluminum retainers not less than 1.25 mm (0.050 inch) wall thickness with vinyl, neoprene, silicone rubber, or polyurethane inserts. Aluminum shall be clear anodized.

2.3.17.2 Interlocking Type

Zinc or bronze not less than 0.45 mm (0.018 inch) thick.

2.3.17.3 Spring Tension Type

Spring bronze or stainless steel not less than 0.20 mm (0.008 inch) thick.

2.3.18 Lightproofing and Soundproofing

A set shall include adjustable doorstops at head and jambs and an automatic door bottom, both of extruded aluminum, bronze anodized, surface applied, with vinyl fin seals between plunger and housing. Doorstops shall have solid neoprene tube, silicone rubber, or closed-cell sponge gasket. Door bottoms shall have adjustable operating rod and silicone rubber or closed-cell sponge neoprene gasket. Doorstops shall be mitered at corners. Zero "Sound Stop 1" (No. 770 and No. 361); Pemko No. 350ASN and No. 430AS; National Guard No. 1038N and No. 420; or equal.

2.3.19 Rain Drips

Extruded aluminum, not less than 2.03 mm thick, bronze anodized. Set drips in sealant conforming to Section 07920N, "Joint Sealants," and fasten with stainless steel screws.

2.3.19.1 Door Rain Drips

Approximately 38 mm high by 16 mm (1-1/2 inches high by 5/8 inch) projection. Align bottom with bottom edge of door.

2.3.19.2 Overhead Rain Drips

Approximately 38 mm high by 64 mm (1-1/2 inches high by 1-1/2 inches) projection, with length equal to overall width of door frame. Align bottom with door frame rabbet.

2.3.20 Special Tools

Provide special tools, such as spanner and socket wrenches and dogging keys, required to service and adjust hardware items.

2.4 FASTENERS

Provide fasteners of proper type, quality, size, quantity, and finish with hardware. Fasteners exposed to weather shall be of nonferrous metal or stainless steel. Provide fasteners of type necessary to accomplish a permanent installation.

2.5 FINISHES

ANSI/BHMA A156.18. Hardware shall have BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except surface door closers which shall have prime coat finish, and except steel hinges which shall have BHMA 600 finish (primed for painting).

Hinges for exterior doors shall be stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish. Exit devices may be provided in BHMA 626 finish in lieu of BHMA 630 finish except where BHMA 630 is specified under paragraph entitled "Hardware Sets". Exposed parts of concealed closers shall have finish to match lock and door trim. Hardware for aluminum doors shall be finished to match the doors.

2.6 KEY CABINET AND CONTROL SYSTEM

Type required to yield a capacity (number of hooks) 50 percent greater than the number of key changes used for door locks.

PART 3 EXECUTION

3.1 INSTALLATION

Install hardware in accordance with manufacturers' printed instructions. Provide machine screws set in expansion shields for fastening hardware to solid concrete and masonry surfaces. Provide toggle bolts where required for fastening to hollow core construction. Provide through bolts where necessary for satisfactory installation.

3.1.1 Weather Stripping Installation

Handle and install weather stripping so as to prevent damage. Provide full contact, weather-tight seals. Doors shall operate without binding.

3.1.1.1 Stop-Applied Weather Stripping

Fasten in place with color-matched sheet metal screws not more than 225 mm o.c. after doors and frames have been finish painted.

3.1.2 Lightproofing and Soundproofing Installation

Install as specified for stop-applied weather stripping.

3.1.3 Threshold Installation

Extend thresholds the full width of the opening and notch end for jamb stops. Set thresholds in a full bed of sealant and anchor to floor with cadmium-plated, countersunk, steel screws in expansion sleeves.

3.2 FIRE DOORS AND EXIT DOORS

Install hardware in accordance with NFPA 80 for fire doors, NFPA 101 for exit doors.

3.3 HARDWARE LOCATIONS

ANSI/SDI 100, unless indicated or specified otherwise.

- a. Kick Plates: Push side of single-acting doors. Both sides of double-acting doors.
- b. Mop Plates: Bottom flush with bottom of door.

3.4 KEY CABINET AND CONTROL SYSTEM

Locate where directed. Tag one set of file keys and one set of duplicate keys. Place other keys in appropriately marked envelopes, or tag each key. Furnish complete instructions for setup and use of key control system. On tags and envelopes, indicate door and room numbers or master or grand master key.

3.5 FIELD QUALITY CONTROL

After installation, protect hardware from paint, stains, blemishes, and other damage until acceptance of work. Submit notice of testing 15 days before scheduled, so that testing can be witnessed by the Contracting Officer. Adjust hinges, locks, latches, bolts, holders, closers, and other items to operate properly. Demonstrate that permanent keys operate respective locks, and give keys to the Contracting Officer. Correct, repair, and finish, as directed, errors in cutting and fitting and damage to adjoining work.

3.6 HARDWARE SETS

Hardware for aluminum doors shall be provided under this section. Deliver Hardware templates and hardware, except field-applied hardware to the aluminum door and frame manufacturer for use in fabricating the doors and frames.

HW - 1 Door shall be under the direct control of the facility user from either Administrative Office 101 or 103. Doors shall be fully operable from the inside in an emergency/life safety situation. Lock shall be designed into door header locking doors closed. A signal from the interior motion detector unlocks door and operator opens same. Door closes automatically and relocks. Door is to FAIL SAFE should there be an electrical power failure. All door hardware shall be Grade 1 and shall incorporate a presence detection zone close to doors for life/safety purposes and a motion detection zone for activation mounted overhead both sides of door opening. Door hardware shall comply with physical handicapped requirements and ANSI 156.190 where noted. In normal entry use, the opening of the interior door shall be delayed until exterior door is in shut position.

1-1/2 Pair Hinges, A5111

1. Electric Lock

Closers: Provide either electro-hydraulic operated or low energy electro-mechanical opener/closer for both doors. Opener/closer shall operate reliably under Fort Drum's winter weather. Contractor shall price both systems. System choice shall be by the Contracting Officer.

1 Pull, J401, combination wood and metal, metal finish to match door.

1 Push bar, J501, finish to match door.

1 Threshold, J3213, finish to match door.

1 Set Weatherstripping.

HW - 2 1-1/2 Pair Hinges, A5111

1 Exit Device , Fig 13, Type 6 x 04 x 630.

1 Closer, C82011 x PT1 x 4C x 600.

1 Pull, J401, combination wood and metal, metal finish to match door.

1 Push bar, J501, finish to match door.

1 Set Weatherstripping.

HW - 3 Same as HW - 1, minus electric lock and threshold.

HW - 4 1-1/2 Pair Hinges, A5111.

1 Closer, C82011 x PT1 x 4C x 600.

1 Pull, J401, combination wood and metal, metal finish to

- match door.
- 1 Push bar, J501, finish to match door.
- 1 Set Weatherstripping.
- HW - 5 1-1/2 Pair Hinges A8112 x 600.
- 1 Lockset, F84 x 630, (lever).
- 1 Closer, C82011 x PT1 x 4C x 600.
- 1 Set Silencers, L03011.
- HW - 6 3 Pair Hinges, A8111 x 600.
- 2 Exit Devices, Fig 11, Type 8 x 08 x 626 (both leaves),
entrance by lever.
- 2 Closers, C82011 x PT4g x 600.
- HW - 7 1-1/2 Pair Hinges, A8112 x 600.
- 1 Lockset, F84 x 630 (lever).
- 1 Set Silencers, L03011.
- HW - 8 1-1/2 Pair Hinges, A5111.
- 1 Exit Device, Fig 11, Type 8 x 08 x 626.
- 1 Closer, C82011 x PT1 x 4C x 600.
- 1 Threshold J32130.
- 1 Set Weatherstripping.
- 1 Kickplate, J102 x 630.
- HW - 9 1-1/2 Pair Hinges, A8112 x 600.
- 1 Lockset, F75 x 630 (lever).
- 1 Closer, C82011 x PT1 x 4C x 600.
- 1 Set Weatherstripping.
- 1 Kickplate, J102 x 630.
- HW - 10 Same as HW - 7 plus 1 Kickplate J102 x 630.
- HW - 11 1-1/2 Pair Hinges, A8112 x 600.

- 1 Lockset, F75 x 630 (lever).
 - 1 Closer, C82011 x PT1 x 4C x 600.
 - 1 Set Silencers, L03011.
 - 2 Kickplates, J102 x 630.
- HW - 12
- 3 Pair Hinges, A8112 x 600.
 - 1 Lockset, F84 x 630.
 - 1 Set Flush Bolts, L58511 (inactive leaf)
 - 2 Kickplates, J102 x 630.
- HW - 13
- 3 Pair Hinges A5112.
 - 1 Lockset, F08 x 630 (active leaf).
 - 1 Threshold, J32130.
 - 2 Overhead Door Holder, L08511.
 - 1 Set Flush Bolts, L58511 (inactive leaf).
 - 1 Astagal (active leaf).
 - 1 Set Weatherstripping.
 - 2 Kickplates, J102 x 630.
- HW - 14
- 1-1/2 Pair Hinges, A5112.
 - 1 Lockset, F08 x 630.
 - 1 Threshold, J32130.
 - 1 Overhead Door Holder, L08511.
 - 1 Set Weatherstripping.
 - 1 Kickplate, J102 x 630.
- HW - 15
- 1-1/2 Pair Hinges A8112 x 600.
 - 1 Lockset, F84 x 630 (Lever).
 - 1 Set Silencers.
 - Doors shall be lightproof and soundproof.
- HW - 16
- 1-1/2 Pair Hinges, A8111 x 600.

1 Exit Device, Fig 11, Type 8 x 08 x 626.

1 Closer, C82011 x PT1 x 4C x 4G x 600.

1 Set Silencers, L03011.

HW - 17 3 Pair Hinges, A8112 x 600.

1 Lockset, F08 x 630.

1 Set Flush Bolts, L58511 (inactive leaf).

2 Kickplates, J102 x 630.

HW - 18 2 Each Padlocks with interchangeable core per overhead door.

HW - 19 See Section 10660 FIRE RATED STEEL FRAMING SYSTEM,
Paragraph 2.1.4, Hardware.

-- End of Section --

SECTION 08900

GLAZED CURTAIN WALL

09/99

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA 1 (1997) Aluminum Standards and Data

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

AAMA MCWM-1 (1996) Metal Curtain Wall Manual

AAMA CW-10 (1997) Care and Handling of Architectural Aluminum from Shop to Site

AAMA/NWWDA 101/I.S.2 (1997) Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors

AAMA 501 (1994) Exterior Walls

AAMA 608.1 (1977) Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum

AAMA 609 (1993) Cleaning and Maintenance of Architectural Anodized Aluminum

AAMA 610.1 (1979) Cleaning and Maintenance of Painted Aluminum Extrusions and Curtain Wall Panels

AAMA 800 (1992; Addenda 1994) Sealants

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4 (1995) Basic Hardboard

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36/A 36M (1997; Rev. A) Carbon Structural Steel

ASTM A 123/A 123M (1997) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 153/A 153M (1998) Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A 167 (1996) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

ASTM A 242/A 242M	(1998) High-Strength Low-Alloy Structural Steel
ASTM A 424	(1997) Steel, Sheet, for Porcelain Enameling
ASTM A 570/A 570M	(1997) Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality
ASTM A 572/A 572M	(1998) High-Strength Low-Alloy Columbium-Vanadium of Structural Steel
ASTM A 588/A 588M	(1997; Rev. A) High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick
ASTM A 606	(1998) Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance
ASTM A 607	(1998) Steel, Sheet and Strip, High-Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled and Cold-Rolled
ASTM A 611	(1997) Commercial Steel (CS) Sheet, Carbon, Cold-Rolled
ASTM A 653/A 653M	(1998) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM B 26/B 26M	(1997) Aluminum-Alloy Sand Castings
ASTM B 85	(1996) Aluminum-Alloy Die Castings
ASTM B 108	(1997) Aluminum-Alloy Permanent Mold Castings
ASTM B 136	(1984; R 1993) Measurement of Stain Resistance of Anodic Coatings on Aluminum
ASTM B 137	(1995) Measurement of Coating Mass Per Unit Area on Anodically Coated Aluminum
ASTM B 152M	(1997; Rev. A) Copper Sheet, Strip, Plate, and Rolled Bar (Metric)
ASTM B 152	(1997; Rev. A) Copper Sheet, Strip, Plate, and Rolled Bar
ASTM B 209M	(1995) Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
ASTM B 209	(1996) Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 221M	(1996) Aluminum and Aluminum-Alloy

	Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM B 221	(1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 244	(1997) Measurement of Thickness of Anodic Coatings on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals With Eddy-Current Instruments
ASTM C 236	(1989; R 1993) Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box
ASTM C 542	(1994) Lock-Strip Gaskets
ASTM C 612	(1993) Mineral Fiber Block and Board Thermal Insulation
ASTM C 665	(1998) Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
ASTM C 864	(1998) Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
ASTM C 920	(1998) Elastomeric Joint Sealants
ASTM C 1036	(1991; R 1997) Flat Glass
ASTM C 1048	(1997; Rev. B) Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass
ASTM D 1037	(1996; Rev. A) Evaluating the Properties of Wood-Base Fiber and Particle Panel Materials
ASTM D 3656	(1997) Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns
ASTM E 34	(1994; R 1998) Chemical Analysis of Aluminum and Aluminum-Base Alloys
ASTM E 84	(1998) Surface Burning Characteristics of Building Materials
ASTM E 90	(1997) Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
ASTM E 119	(1998) Fire Tests of Building Construction and Materials
ASTM E 136	(1996; Rev. A) Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C
ASTM E 283	(1991) Rate of Air Leakage Through

Exterior Windows, Curtain Walls, and Doors
Under Specified Pressure Differences
Across the Specimen

ASTM E 330 (1997) Structural Performance of Exterior
Windows, Curtain Walls, and Doors by
Uniform Static Air Pressure Difference

ASTM E 331 (1996) Water Penetration of Exterior
Windows, Curtain Walls, and Doors by
Uniform Static Air Pressure Difference

ASTM E 546 (1988; R 1995) Frost Point of Sealed
Insulating Glass Units

ASTM E 576 (1988; R 1995) Frost Point of Sealed
Insulating Glass Units in the Vertical
Position

ASTM E 774 (1997) Sealed Insulating Glass Units

AMERICAN WELDING SOCIETY (AWS)

AWS A5.10 (1992) Bare Aluminum and Aluminum Alloy
Welding Electrodes and Rods

AWS D1.1 (1998) Structural Welding Code - Steel

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

16 CFR 1201 Architectural Glazing Materials

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM MFM (1988) Metal Finishes Manual

PORCELAIN ENAMEL INSTITUTE (PEI)

PEI-1001 (1996) Architectural Porcelain Enamel

STEEL WINDOW INSTITUTE (SWI)

SWI SGSW (1989) Specifier's Guide to Steel Windows

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal
Procedures."

SD-02 Shop Drawings

Glazed curtain wall system; G, AE.

Submit for curtain wall system, accessories, and mock-up.
Tentative approval of drawings shall be received before
fabrication of mock-up. Final approval of drawings will be
deferred pending approval of mock-up and accessories. Drawings
shall indicate in detail all system parts including elevations,
full-size sections, framing, jointing, panels, types and thickness

of metal, flashing and coping details, field connections, weep and drainage system, finishes, sealing methods, glazing, glass sizes and details, firestopping insulation materials, and erection details.

SD-03 Product Data

Glazed curtain wall system; G, AE.

Include descriptive literature, detailed specifications, and available performance test data.

SD-05 Design Data

Calculations; G, AE.

SD-08 Manufacturer's Instructions

Glazed curtain wall system; G, AE.

Insulating glass; G, AE.

1.3 REQUIREMENT FOR DESIGN DATA

Submit structural and thermal calculations for complete wall assembly. Calculations shall be done and sealed by a licensed professional structural engineer.

1.4 QUALITY ASSURANCE

1.4.1 Qualifications for the Curtain-Wall Installer and Manufacturer

The curtain-wall system installer and manufacturer shall provide written certified evidence that they have been continuously engaged in the installation and manufacture of curtain-wall system similar to this project for at least fifteen (15) years. The installer shall submit the name of the curtain-wall manufacturer, qualifications of personnel, years of concurrent contracting experience, lists of projects similar in scope to the specified work, and other information as may be required by the Contracting Officer.

1.4.2 Testing Requirements

The components listed below shall have been tested in accordance with the requirements below, and shall meet performance requirements specified.

- a. Joint and Glazing Sealants: Perform tests as required by applicable publications referenced.
- b. Preformed Compression Gaskets and Seals: ASTM C 864.
- c. Preformed Lock-strip Gaskets: ASTM C 542, modified as follows: Heat age specimens seven days at 70 degrees C (158 degrees F), in zipped or locked position under full design compression. Unzip, cool for one hour, re-zip, and test lip seal pressure, which shall be minimum 0.045 kilograms per linear millimeter (2.5 pounds per linear inch) on any extruded or corner specimen.
- d. Spandrel Glass: Fallout resistance test, ASTM C 1048.

- e. Anodized Finishes: Stain resistance, coating weight, and coating thickness tests, ASTM B 136, ASTM B 137, and ASTM B 244, respectively.
- f. Insulating Glass: ASTM E 546 or ASTM E 576 at minus 29 degrees C (20 degrees F), no frost or dew point.

1.4.3 Factory Tests

Perform the tests except that where a curtain wall system or component of similar type, size, and design as specified for this project has been previously tested, under the conditions specified herein, the resulting test reports may be submitted in lieu of testing the components.

1.4.3.1 Deflection and Structural Tests

No curtain wall framing member shall deflect, in a direction normal to the plane of the wall, more than 1/175 of its clear span or 20 mm (3/4 inch), whichever is less, when tested in accordance with ASTM E 330, except that when a plastered surface will be affected the deflection shall not exceed 1/360 of the span. No framing member shall have a permanent deformation in excess of 0.2 percent of its clear span when tested in accordance with ASTM E 330 for a minimum test period of 10 seconds at 1.5 times the design wind pressures specified.

1.4.3.2 Water Penetration Test

No water penetration shall occur when the wall is tested in accordance with ASTM E 331 at a differential static test pressure of 20 percent of the inward acting design wind pressure as specified. Make provision in the wall construction for adequate drainage to the outside of water leakage or condensation that occurs within the outer face of the wall. Leave drainage and weep openings in members and wall open during test.

1.4.3.3 Air Infiltration Test

Air infiltration through the wall, when tested in accordance with ASTM E 283, shall not exceed 0.005 cms per sq. m (0.06 sfm per square foot) of fixed wall area, plus the permissible allowance specified for operable windows within the test area.

1.4.3.4 Thermal Conductance Tests

The thermal transmittance of opaque panels shall not exceed specified U-value, when tested in accordance with ASTM C 236. The average calculated thermal transmittance of the complete wall assembly including panels, windows, and all other components shall not exceed a U-value of 0.58. Determine U-values of components in accordance with ASTM C 236.

1.4.3.5 Window Tests

Windows shall meet the requirements specified in Section 08520 ALUMINUM WINDOWS, except where the requirements of this section differ, this section shall govern. Windows shall meet the same requirements for deflection and structural adequacy as specified for framing members when tested in accordance with ASTM E 330 except permanent deformation shall not exceed 0.4 percent; there shall be no glass breakage, and no permanent damage to fasteners, anchors, hardware, or operating devices. Windows shall have no

water penetration when tested in accordance with ASTM E 331.

1.4.3.6 Fire Resistance Tests

Insulation field applied in conjunction with the curtain wall system shall have a flame spread rating not exceeding 75 and a smoke developed rating not exceeding 150 when tested in accordance with ASTM E 84, except as specified otherwise herein.

- a. Curtain Wall Systems: Material for firestopping the opening between the edge of the floor slab and back of the curtain wall system, shall have not less than the flame spread and smoke developed ratings specified for insulation which is neither isolated from the building interior nor encased in masonry cores.
- b. Firestopping Materials and Devices: Firestopping material and attachment devices shall be an effective barrier against the spread of fire, smoke, and gases for a period of 1 hour when exposed to the conditions of the standard ASTM E 119 time-temperature curve for a period equivalent to the fire rating of the floor system and shall also be rated noncombustible when tested in accordance with ASTM E 136.

1.5 GLAZED CURTAIN WALL SYSTEM REQUIREMENTS

Provide system complete with framing, mullions, trim, panels, windows, glass, glazing, sealants, insulation, fasteners, anchors, accessories, concealed auxiliary members, and attachment devices for securing the wall to the structure as specified or indicated.

1.5.1 Source

Curtain wall system components shall be furnished by one manufacturer or fabricator; however, all components need not be products of the same manufacturer.

1.5.2 Design

Fully coordinate system accessories directly incorporated, and adjacent to contiguous related work and insure materials compatibility, deflection limitations, thermal movements, and clearances and tolerances as indicated or specified.

1.5.3 Thermal Movement

Fabricate, assemble, and erect system with adequate allowances for expansion and contraction of components and fastenings to prevent buckling damage, joint seal failure, glass breakage, undue stress on fastenings or other detrimental effects. For design purposes, base provisions for thermal movement on assumed ambient temperature range appropriate to the Fort Drum site.

1.5.4 Tolerances

Design and erect wall system to accommodate tolerances in building frame and other contiguous work as indicated or specified. Provide with the following tolerances:

- a. Maximum variation from plane or location shown on approved shop

drawings: one millimeter per 12 meters (1/8 inch per 12 feet) of length up to not more than 13 mm (1/2 inch) in any total length.

- b. Maximum offset from true alignment between two identical members abutting end to end in line: 2 mm (1/16 inch).

1.5.5 Structural Requirements

No member shall deflect in a direction parallel to the plane of the wall, when carrying its full design load, more than an amount which will reduce the edge cover or glass bite below 75 percent of the design dimension. No member after deflection under full design load, shall have a clearance between itself and the top of the panel, glass, sash, or other part immediately below it less than 3 mm (1/8 inch); the clearance between the member and an operable window or door shall be minimum 2 mm (1/16 inch). Design entire system to withstand the indicated wind and concentrated loads, and the following wind load acting normal to the plane of the wall shall be 200 kg per square meter (40 pounds per square foot).

1.6 QUALIFICATION OF WELDERS

Welding shall be performed by certified welders qualified in accordance with AWS D1.1 using procedures, materials, and equipment of the type required for the work.

1.7 DELIVERY AND STORAGE

Inspect materials delivered to the site for damage; unload and store with a minimum of handling in accordance with recommendations contained in AAMA CW-10. Storage spaces shall be dry locations with adequate ventilation, free from heavy dust, not subject to combustion products or sources of water, and shall permit easy access for inspection and handling. Deliver calking and sealing compounds to the job site in sealed containers labeled to show the designated name, formula or specifications number; lot number; color; date of manufacturer; shelf life; and curing time when applicable.

1.7.1 Protective Covering

Prior to shipment from the factory, place knocked-down lineal members in cardboard containers and cover finished surfaces of aluminum with protective covering of adhesive paper, waterproof tape, or strippable plastic. Covering shall not chip, peel, or flake due to temperature or weather, shall protect against discoloration and surface damage from transportation, and storage, and shall be resistant to alkaline mortar and plaster. Do not cover aluminum surfaces that will be in contact with sealants after installation.

1.7.2 Identification

Prior to delivery, mark wall components to correspond with shop and erection drawings placement location and erection.

1.8 WARRANTY

Insulating glass units shall be guaranteed not to develop material obstruction of vision as a result of dust or film formation on the inner glass surface caused by failure of the seal, other than through glass breakage, within a period of 5 years from date of acceptance of work by the Government. Units failing to comply with the terms of this guarantee shall

be replaced with new units without additional cost to the Government. The Contractor shall require the manufacturer to execute their warranties in writing directly to the Government.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Aluminum

Shall be free from defects impairing strength or durability of surface finish. Standard alloys shall conform to standards and designations of AA 1.

Special alloys, not covered by the following ASTM specifications, shall conform to standards and designations recommended by the manufacturer for the purpose intended.

2.1.1.1 Wrought Aluminum Alloys

Shall be those which include aluminum alloying elements not exceeding the following maximum limits when tested and additional in accordance with ASTM E 34. These limits apply to both bare products and the core of clad products. The cladding of clad products shall be within the same limits except that the maximum zinc limit may be 2.5 percent in order to assure that the cladding is anodic to the core. Special wrought alloys with a silicon content not more than 7.0 percent will be acceptable for limited structural uses where special appearance is required:

<u>ALLOY</u>	<u>PERCENT</u>
Silicon	1.5
Magnesium, Manganese, and Chromium combined	6.0
Iron	1.0
Copper	0.4
Zinc	1.0

Within the chemical composition limits set forth above, wrought aluminum alloys shall conform to the following:

- a. Extruded bars, rods, shapes and tubes: ASTM B 221M.
- b. Sheet and Plate: ASTM B 209M.

2.1.1.2 Cast Aluminum Alloys

Provide those in which the alloying elements are silicon, magnesium, manganese, or a combination of these. Other elements shall not exceed the following limits:

<u>ELEMENT</u>	<u>PERCENT</u>
Iron	1.2
Copper	0.4

<u>ELEMENT</u>	<u>PERCENT</u>
Nickel	0.4
Titanium	0.2
Others (total)	0.5

Within the chemical composition limits set forth above, cast aluminum alloys shall conform to the following:

- a. Sand castings: ASTM B 26/B 26M.
- b. Die casting: ASTM B 85.
- c. Permanent mold castings: ASTM B 108.

2.1.1.3 Welding Rods and Electrodes

Welding rods and bare electrodes shall conform to AWS A5.10 as recommended by the manufacturer of the aluminum base metal alloy being used.

2.1.1.4 Finish

Anodized finish on aluminum surfaces shall match in appearance or fall within the two extremes of color range of the approved samples. The following designation of finishes refer to standard finishes as defined in the NAAMM MFM. Aluminum used for framing shall have a color anodized finish designation AA-MIO-C22-A34 and AA-MIOC22-A44, meeting the requirements of AAMA 608.1.

2.1.1.5 Strength

Aluminum extrusions for framing members used in curtain walls and main frame and sash or ventilator members in windows shall have a minimum ultimate tensile strength of 152 MPa (22,000 psi) and a minimum yield strength of 110 MPa (16,000 psi).

2.1.2 Carbon Steel

Conform to the following specifications:

- a. Rolled shapes, plates, and bars: ASTM A 36/A 36M.
- b. Galvanized sheets: ASTM A 653/A 653M.
- c. Sheets for porcelain enameling: ASTM A 424.
- d. Other sheets: ASTM A 570/A 570M or ASTM A 611.

2.1.3 High-Strength, Low-Alloy Steel

Conform to ASTM A 572/A 572M for structural shapes, plates, and bars.

2.1.4 Metal Fasteners

Provide fasteners as specified in paragraph entitled "Fastener Metals for Joining Various Metal Combinations" in "Part 2 - Products" of the AAMA MCWM-1. Metals used for fasteners shall be chemically and galvanically

compatible with contiguous materials.

2.1.5 Joint Sealants and Accessories

Provide manufacturer's standard colors as closely matching the adjacent surfaces as possible.

2.1.5.1 Elastomeric, Single or Multiple Component

ASTM C 920, Type S, single component. Use Grade NS, nonsag type in joints on vertical surfaces and use Grade P, self-leveling or flow type, in joints on horizontal surfaces.

2.1.5.2 Single Component Silicone Rubber Base

ASTM C 920, Type S, Grade NS (Silicone).

2.1.5.3 Solvents and Primers

Provide material which is quick drying, colorless, nonstaining, compatible with compound used, as recommended by sealant manufacturer. Where primer is specified or recommended by sealant manufacturer, tests related to that material shall include primer.

2.1.5.4 Backing Material

Provide material which is nonstaining, nonabsorbent, and compatible with sealing compound. Closed cell resilient urethane, polyvinylchloride or polyethylene foam; closed-cell sponge of vinyl or rubber; closed cell neoprene or butyl rod; or polychloroprene tubes or beads.

2.1.5.5 Bond Preventive Materials

Provide polyethylene tape with pressure-sensitive adhesive; aluminum foil or waxed paper.

2.1.5.6 Preformed Sealing Compound

Provide nonskinning type conforming to AAMA 800. Tapes, beads, ribbons or other shapes as required.

2.1.6 Glass and Glazing

Conform to ASTM C 1036, except ASTM C 1048 for spandrel glass. All glazing material must be certified as meeting 16 CFR 1201.

2.1.6.1 Glass Sizes and Clearances

Sizes indicated are nominal. Verify actual sizes required by measuring frames. Coordinate dimensions for glass and glass holding members to meet applicable minimum clearances as recommended by glass manufacturer. Do not nip to remove flares or to reduce oversized dimensions.

2.1.6.2 Insulating Glass

Fused glass, banded, or unbanded. Banded type, ASTM E 774, Class A shall have perimeter banded or sealed, and encased in a nonferrous metal or stainless steel frame. Unbanded type shall have perimeter sealed by manufacturer's standard organic sealant. Do not field cut.

2.1.6.3 Spandrel Glass With Adhered Backing

ASTM C 1048, kind FT or HS, condition B, Type I, thickness 6 mm (1/4 inch).

2.1.6.4 Glass Setting Materials

- a. Sealants and preformed sealing compounds: Shall be as specified under paragraph entitled "Joint Sealant and Accessories."
- b. Preformed compression gaskets and seals: ASTM C 864, color black.
- c. Preformed lock-strip type gaskets: ASTM C 542, factory formed, color black. Provide separate filler or locking strips, approximately 10 Shore "A" Durometer points harder than gasket body, and insure permanent and continuous pressure of sealing lips. Grooves and ends shall be square butted or mitered 45 degrees.
- d. Setting blocks, edge blocks, and spacer shims: Fabricate from neoprene or other materials recommended by glass manufacturer compatible with compounds, sealants, or gaskets used. Unless otherwise recommended by the glass manufacturer, shore "A" Durometer hardness for setting and edge blocks shall be 90 plus or minus 5; for spacer shims, 50 plus or minus 5.

2.1.7 Firestopping Material

Portland cement concrete of same design and strength as floor slab, as specified in Section 03300 CAST-IN-PLACE CONCRETE, Mineral fiber manufactured from asbestos-free materials, and conforming to ASTM C 612 or ASTM C 665, meeting fire resistance requirements specified, and as specified in Section 07840 FIRESTOPPING.

2.1.8 Paint and Finishes

2.1.8.1 Primer

Zinc-molybdate, alkyd type.

2.1.9 Panels

Maximum U-value 0.05. Where, in order to meet the requirements specified, the proposed panel assembly is thicker than indicated, make corresponding adjustments in accessories and other work such as door, window and louver frames, flashing, coping, and trim products at no extra cost to the Government. Unless otherwise indicated, design for installation from outside the building. Provide vapor barrier on interior face of insulation. Seal edges of panels with cores of absorptive material to prevent entrance of water and allow venting of the core space to outside air.

2.1.9.1 Nonmetallic Panels

Panels shall be glass-faced on the side that will be exposed to view. Glass shall be spandrel glass with ceramic coating on its nonweathering surface and smooth finish on the exposed surface. Insulation shall be adhesively bonded to nonweathering surface. Color of glass when viewed from the surface that will be exposed after installation shall match

building accent brick.

2.1.10 Metal Windows

Fixed and operating. Comply with requirements of Section 08520, Aluminum Windows AAMA/NWWDA 101/I.S.2 as modified herein. Provide inside glazing with removable metal glazing beads. Comply with glass clearance dimensions and sealant dimensions recommended by glass manufacturer.

2.1.10.1 Frames

Frames for fixed glazed panels and window units shall be aluminum.

2.1.10.2 Operating Windows

Operating windows shall be projected type. Operating windows shall be complete with hardware, weatherstripping, and accessories. Hardware shall comply with AAMA/NWWDA 101/I.S.2.

2.1.10.3 Window Construction

Weld or mechanically join and seal corners of frames and ventilators for water-tight construction. Remove excess metal from welded joints and dress smooth on exposed and contact surfaces so that no objectionable discoloration or roughness will be visible after finishing. Apply sealing compound in interior surfaces of corners and frame intersections.

2.1.11 Insect Screens

Provide insect screens for ventilators of aluminum windows in accordance with Section 08520 ALUMINUM WINDOWS and AAMA/NWWDA 101/I.S.2. Screens for projected windows shall be fixed type. Screens shall be mounted on inside of windows. Screens shall be rewirable, easily removable from inside the building, and interchangeable for same size ventilators of similar type windows. Provide hardware, guides, stops, clips, bolts, and screws as necessary for a secure and tight attachment to window. Where sliding or hinged wickets are required in screens to permit operation of window hardware, the frame around the wicket opening shall be of similar material and strengths as the screen frames.

- a. Frames: Construct screen frames of similar material and finish as specified for the windows to which attached. Screen frame construction shall consist of closed tubular shapes standard with the manufacturer, either extruded or roll formed. Frames shall be mitered, electrically flash welded, then dressed smooth; or shall have internal reinforcing or blocks at corners and mechanically connected corners. Screen frames shall have removable splines of aluminum, stainless steel, or vinyl.
- b. Screening: Weave of screening shall be parallel with frames and sufficiently tight to present a smooth appearance. Conceal edges of screening in spline channel of frames.
- c. Hardware: Screen hardware shall be manufacturer's standard type and finish, unless otherwise indicated.

2.1.12 Metal Accessories

Metal sills, metal stools, venetian blind pockets, closures, etc. Fabricate

accessories from similar materials and finish as specified for wall system.

PART 3 EXECUTION

3.1 FABRICATION

The curtain wall components shall be of the materials and thickness indicated or specified. The details indicated are representative of the required design and profiles. Acceptable designs may differ from that shown if the proposed system components conform to the limiting dimensions indicated and the requirements specified herein. Unless specifically indicated or specified otherwise, the methods of fabrication and assembly shall be at the discretion of the curtain wall manufacturer. Perform fitting and assembling of components in the shop to the maximum extent practicable. Anchorage devices shall permit adjustment in three directions. Exposed fastenings used on finished surfaces shall be truss head, flat head, or oval head screws or bolts.

3.1.1 Joints

Provide welded or mechanical fasteners as indicated or specified. Match joints in exposed work to produce continuity of line and design. Bed-joints or rabbets receiving calking or sealing material shall be minimum 20 mm (3/4 inch) deep and 10 mm (3/8 inch) wide at mid ambient temperature range.

3.1.2 Welding

Conform to AWS D1.1. Use methods and electrodes recommended by manufacturers of base metal alloys. Welding rods shall be of an alloy that matches the color of the metal being welded. Protect glass and other finish from exposure to welding spatter. Ground and finish weld beads on exposed metal surfaces to minimize mismatch and to blend with finish on adjacent parent metal. If flux is used in welding aluminum, completely remove it immediately upon completion of welding operations. Do not use exposed welds on aluminum surfaces.

3.1.3 Soldering and Brazing

Provide as recommended by suppliers. Solder only for filling or sealing joints.

3.1.4 Ventilation and Drainage

Provide internal ventilation drainage system of weeps or based on principles of pressure equalization to ventilate the wall internally and to discharge condensation and water leakage to exterior as inconspicuously as possible. Flashings and other materials used internally shall be nonstaining, noncorrosive, and nonbleeding.

3.1.5 Protection and Treatment of Metals

3.1.5.1 General

Remove from metal surfaces lubricants used in fabrication and clean off other extraneous material before leaving the shop.

3.1.5.2 Galvanic Action

Provide protection against galvanic action wherever dissimilar metals are

in contact, except in the case of aluminum in permanent contact with galvanized steel, zinc, stainless steel, or relatively small areas of white bronze. Paint contact surfaces with one coat bituminous paint or apply appropriate calking material or nonabsorptive, noncorrosive, and nonstaining tape or gasket between contact surfaces.

3.1.5.3 Protection for Aluminum

Protect aluminum which is placed in contact with, built into, or which will receive drainage from masonry, lime mortar, concrete, or plaster with one coat of alkali-resistant bituminous paint. Where aluminum is contacted by absorptive materials subject to repeated wetting or treated with preservative noncompatible with aluminum, apply two coats of aluminum paint, to such materials and seal joints with approved calking compound.

3.2 INSTALLATION

Installation and erection of glazed wall system and all components shall be performed under direct supervision of and in accordance with approved recommendations and instructions of wall system manufacturer or fabricator.

3.2.1 Bench Marks and Reference Points

Establish and permanently mark bench marks for elevations and building line offsets for alignment at convenient points on each floor level. Should any error or discrepancy be discovered in location of the marks, stop erection work in that area until discrepancies have been corrected.

3.2.2 Verifying Conditions and Adjacent Surfaces

After establishment of lines and grades and prior to system installation examine supporting structural elements. Verify governing dimensions, including floor elevations, floor to floor heights, minimum clearances between curtain wall and structural frames, and other permissible dimensional tolerances in the building frame.

3.2.3 Panels

Install panels in framing member openings using gaskets and sealants as required by curtain wall manufacturer.

3.2.4 Windows

Install windows in accordance with details indicated and approved detail drawings.

3.2.4.1 Sealing

Seal exterior metal to metal joints between members of windows, frames, mullions, and mullion covers. Remove excess sealant.

3.2.4.2 Ventilators and Hardware

After installing and glazing windows, adjust ventilators and hardware to operate smoothly and to be weathertight when ventilators are closed and locked. Lubricate hardware and moving parts.

3.2.4.3 Weatherstripping

Install to make weathertight contact with frames when ventilators are closed and locked. Do not cause binding of sash or prevent closing and locking of ventilator.

- a. Provide for ventilating sections of all windows to insure a weather-tight seal meeting the infiltration tests specified. Use easily replaceable factory-applied weatherstripping of manufacturer's stock type. Use molded vinyl, molded or molded-expanded neoprene for weatherstripping for compression contact surfaces. Do not use neoprene or polyvinyl chloride weatherstripping where they will be exposed to direct sun light.

3.2.5 Joint Sealants

3.2.5.1 Surface Preparation

Surfaces to be primed and sealed shall be clean, dry to the touch, free from frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter. Enclose joints on three sides. Clean out grooves to proper depth. Joint dimensions shall conform to approved detail drawings with a tolerance of plus 3 mm (1/8 inch). Do not apply compound unless ambient temperature is between 4 and 32 degrees C (40 and 90 degrees F). Clean out loose particles and mortar just before sealing. Remove protective coatings or coverings from surfaces in contact with sealants before applying sealants or tapes. Solvents used to remove coatings shall be of type that leave no residue on metals.

3.2.5.2 Applications

Match approved sample. Force compound into grooves with sufficient pressure to fill grooves solidly. Sealing compound shall be uniformly smooth and free of wrinkles and, unless indicated otherwise, shall be tooled and left sufficiently convex to result in a flush joint when dry. Do not trim edges of sealing material after joints are tooled. Mix only amount of multi-component sealant which can be installed within four hours, but at no time shall this amount exceed 19 liters.

3.2.5.3 Primer

Apply to masonry, concrete, wood, and other surfaces as recommended by sealant manufacturer. Do not apply primer to surfaces which will be exposed after calking is completed.

3.2.5.4 Backing

Tightly pack in bottom of joints which are over 13 mm (1/2 inch) in depth with specified backing material to depth indicated or specified. Roll backing material of hose or rod stock into joints to prevent lengthwise stretching.

3.2.5.5 Bond Prevention

Install bond preventive material at back or bottom of joint cavities in which no backstop material is required, covering full width and length of joint cavities.

3.2.5.6 Protection and Cleaning

Remove compound smears from surfaces of materials adjacent to sealed joints

as the work progresses. Use masking tape on each side of joint where texture of adjacent material will be difficult to clean. Remove masking tape immediately after filling joint. Scrape off fresh compound from adjacent surfaces immediately and rub clean with approved solvent. Upon completion of calking and sealing, remove remaining smears, stains, and other soiling, and leave the work in clean neat condition.

3.2.6 Glass

Install in accordance with manufacturer's recommendations as modified herein.

3.2.6.1 Inspection of Sash and Frames

Before installing glass, inspect sash and frames to receive glass for defects such as dimensional variations, glass clearances, open joints, or other conditions that will prevent satisfactory glass installation. Do not proceed with installation until defects have been corrected.

3.2.6.2 Preparation of Glass and Rabbets

Clean sealing surfaces at perimeter of glass and sealing surfaces of rabbets and stop beads before applying glazing compound, sealing compound, glazing tape, or gaskets. Use only approved solvents and cleaning agents recommended by compound or gasket manufacturer.

3.2.6.3 Positioning Glass

Set glass from inside the building unless otherwise indicated or specified. Maintain specified edge clearances and glass bite at perimeter. Maintain position of glass in rabbet and provide required sealant thickness on both sides of glass. For glass dimensions larger than 1270 united millimeters (50 united inches), provide setting blocks at sill and spacer shims on all four sides; locate setting blocks one quarter way in from each jamb edge of glass. Where setting blocks and spacer shims are set into glazing compound or sealant, butter with compound or sealant, place in position, and allow to firmly set prior to installation of glass.

3.2.6.4 Setting Methods

Apply glazing compound, glazing sealant, glazing tape, and gaskets uniformly with accurately formed corners and bevels. Remove excess compound from glass and sash. Use only recommended thinners, cleaners, and solvents. Strip surplus compound from both sides of glass and tool at slight angle to shed water and provide clean sight lines. Secure stop beads in place with suitable fastenings. Do not apply compound or sealant at temperatures lower than 4 degrees C (40 degrees F), or on damp, dirty, or dusty surfaces. After glazing, fix ventilators in sash so they cannot be operated until compound or sealant has set.

3.2.6.5 Void Space

Heat absorbing, insulating, spandrel, and tempered glass, and glass of other types that exceed 2540 united millimeters (100 united inches) in size: Provide void space at head and jamb to allow glass to expand or move without exuding the sealant.

3.2.6.6 Insulating Glass

Provide adequate means to weep incidental water and condensation away from the sealed edges of insulated glass units and out of the wall system. The weeping of lock-strip gaskets should be in accordance with the recommendation of the glass manufacturer.

3.2.6.7 Insulating Glass With Edge Bands

Insulating glass with flared metal edge bands set in lock-strip type gaskets: Follow glass manufacturer's recommendations and add supplementary wet seal as required; when used with glazing tape, use tapered tape.

3.2.7 Firestopping

Provide firestopping in openings between wall system and floor at each story to prevent passage of flame and hot gases from floor to floor under extended fire exposure. Installed fire stopping shall remain in place under extended fire exposure despite distortions that may occur in wall system components. Securely attach anchoring or containment devices to building structure and not to wall system. Place concrete and firestopping material on steel plates attached to bottom of floor slab.

3.3 FINISHES

3.3.1 Galvanizing

Conform to ASTM A 123/A 123M, ASTM A 153/A 153M, and ASTM A 653/A 653M, as applicable.

3.3.1.1 Repair of Zinc-Coated Surfaces

Repair zinc coated surfaces damaged by welding or other means with galvanizing repair paint or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved.

3.3.2 Shop Cleaning and Painting

3.3.2.1 Cleaning

Clean steel and iron work by power wire brushing or other approved manual or mechanical means, for removal of rust, loose paint, scale, and deleterious substances. Wash cleaned surfaces which become contaminated with rust, dirt, oil, grease, or other foreign matter, with solvents until thoroughly clean. Cleaning steel embedded in concrete is not required.

3.3.2.2 Painting Steel or Iron Surfaces

[Apply one coat of primer.] [Apply primer to a minimum dry film thickness of 0.025 mm.] Apply additional shop coat of specified paint, to which a small amount of tinting material has been added, on surfaces that will be concealed in the finished construction or that will not be accessible for finish painting. Accomplish painting in dry weather or under cover, and on steel or iron surfaces that are free from moisture and frost. Do not paint surfaces of items to be embedded in concrete. Recoat damaged surfaces upon completion of work. Prime coat steel immediately after cleaning. Do not apply bituminous protective coatings to items to be finish painted.

3.4 FIELD TESTS

Conduct field check test for water leakage on designated wall areas after

erection. Conduct test on two wall areas, two bays wide by two stories high where directed. Conduct test and take necessary remedial action as described in AAMA 501.

3.5 CLEANING AND PROTECTION

3.5.1 Glass

Upon completion of wall system installation, thoroughly wash glass surfaces on both sides and remove labels, paint spots, putty, compounds, and other defacements. Replace cracked, broken, and defective glass with new glass at no additional cost to the Government.

3.5.2 Aluminum Surfaces

Protection methods, cleaning, and maintenance shall be in accordance with AAMA 609 and AAMA 610.1.

3.5.3 Other Metal Surfaces

After installation, protect windows, panels, and other exposed surfaces from disfiguration, contamination, contact with harmful materials, and from other construction hazards that will interfere with their operation, or damage their appearance or finish. Protection methods shall be in accordance with recommendations of product manufacturers or of the respective trade association. Remove paper or tape factory applied protection immediately after installation. Clean surfaces of mortar, plaster, paint, smears of sealants, and other foreign matter to present neat appearance and prevent fouling of operation. In addition, wash with a stiff fiber brush, soap and water, and thoroughly rinse. Where surfaces become stained or discolored, clean or restore finish in accordance with recommendations of product manufacturer or the respective trade association.

3.6 SCHEDULE

Some metric measurements in this section are based on mathematical conversion of inch-pound measurements, and not on metric measurement commonly agreed to by the manufacturers or other parties. The inch-pound and metric measurements are as follows:

<u>PRODUCTS</u>	<u>INCH-POUND</u>	<u>METRIC</u>
Glass	1/4 inch	6 mm

-- End of Section --

SECTION 10100A

VISUAL COMMUNICATIONS SPECIALTIES

11/00

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B 221	(1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 221M	(1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM E 84	(1999) Surface Burning Characteristics of Building Materials
ASTM F 152	(1995) Tension Testing of Nonmetallic Gasket Materials
ASTM F 793	(1998) Standard Classification of Wallcovering by Durability Characteristics

1.2 GENERAL REQUIREMENTS

The term visual display board when used herein includes bulletin boards, and tackboards. Visual display boards shall be from manufacturer's standard product line.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Visual Display Boards; G, AE

Manufacturer's descriptive data and catalog cuts.
Manufacturer's installation instructions, and cleaning and maintenance instructions.

SD-04 Samples

Materials; G, AE.

Section of core material showing the lamination of colored cork, natural cork, woven fabric, non-woven fabric, and vinyl wall covering. Sample of hardwood and plastic laminate finish, and glass type. Samples shall be minimum 100 by 100 mm and show range of color.

07 Certificates

Tackboards; FIO

Certificate of compliance signed by Contractor attesting that visual display boards conform to the requirements specified.

1.4 DELIVERY, STORAGE AND HANDLING

Materials shall be delivered to the building site in the manufacturer's original unopened containers and shall be stored in a clean dry area with temperature maintained above 10 degrees C (50 degrees F) . Materials shall be stacked according to manufacturer's recommendations. Tackboards shall be allowed to acclimate to the building temperature for 24 hours prior to installation.

1.5 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

PART 2 PRODUCTS

2.1 COLOR

Finish colors for required items shall be as specified in the drawings or as directed by the Contracting Officer.

2.2 TACKBOARD

2.2.1 Rigid Tackboard Panel

Unless otherwise indicated, make tackboard rigid panel by factory-laminating under pressure to 12 mm (7/16 inch) fireboard, laminated over 13 mm (1/2 inch) thick exterior type particle board backing. Cover the panel with woven fabric which shall be edge wrapped.

2.2.2 Surface Burning Characteristics

Surface burning characteristics shall conform to ASTM E 84; flame spread and smoke development rating shall not be more than 25.

2.2.3 Woven Fabric

Fabric shall be plain weave. Fiber content shall be 100 percent polyester. Minimum total weight shall be 496 grams plus or minus 14 grams per linear meter (16 oz. plus or minus 0.5 oz. per linear yard). Fabric shall have a Class A flame spread rating of 0-50 and smoke development rating of 0-450 in accordance with ASTM E 84.

2.2.4 Fabrication

Provide minimum number of joints, balanced around the center of the tackboard. Bottom of panels shall be 100 mm (4 inches) above finish floor and panels shall extend up to underside of ceiling.

2.3 BULLETIN BOARD

2.3.1 Bulletin Board Panel

Paragraphs 2.2.1, 2.2.2, and 2.2.3 are applicable. Panel shall be 1.8 meters (6 feet) H by 1.8 meters (6 feet) W and shall have an aluminum frame. Bottom of panel shall be 0.6 meters (2 feet) above finish floor.

2.4 ALUMINUM

Aluminum frame extrusions shall be alloy 6063-T5 or 6063-T6, conform to ASTM B 221M, and be a minimum 1.5 mm thick. Exposed aluminum shall have an anodized, satin finish. Straight, single lengths shall be used wherever possible. Joints shall be kept to a minimum. Corners shall be mitered and shall have a hairline closure.

2.5 WALL MOUNTED ELECTRONIC COLOR COPYBOARD

The copyboard shall be wall mounted, with a continuous loop mylar sheet which can be automatically scrollable, be provided with two extra wide, 1.8 meters (71 inches) H by 0.9 meters (36 inches) W, writing panel with faint 50 mm (2 inch) grid lines and accept dry erase markers which shall be removable with a felt eraser or dry cloth without ghosting. Copyboard shall be 120V, UL listed, with a built-in printer. Information displayed shall be capable of being stored on a PC, or integrated within a document or a spread sheet, or printed on a PC printer, and shall provide an exact copy of any information written or taped onto board surfaces. Copyboard shall come equipped with all necessary cables, connections, software, two extra wide writing panels, 1.8 meters (71 inches) H by 0.9 meters (36 inches) W, four dry markers (black, red, blue, green), and two erasers. Copyboard shall plug into an electrical wall outlet.

2.6 PROJECTION SCREEN

Ceiling mounted, recessed mount motorized projection screen shall have 120V motor that is lubricated for life, quick reversal type, has overload protector, integral gears, automatic thermal overload protection, and preset accessible limit switches. Recessed mount projection screens shall have an operable closure door and access panel. Screen shall be flame retardant, mildew resistant, and glass beaded with white masking borders. Bottom of screen fabric shall be weighted with metal rod. Roller shall be of size and capacity recommended by manufacturer. Screen shall have a 3 position control switch to stop or reverse screen at any point. Stop action shall be positive to prevent coasting. The switch shall be installed in a flush electrical box with cover plate, location(s) as shown on the electrical drawings. All conduit and wiring from the control switch to the projection screen shall be furnished and installed by the Contractor. Ceiling recessed case shall be extruded aluminum. Screen shall be UL listed. The size shall be 2.4 meters (8 feet) H by 3.6 meters (12 feet) W. Camera location at the ceiling shall be coordinated with screen in order to provide a full screen picture.

PART 3 EXECUTION

3.1 PLACEMENT SCHEDULE

Location of tackboards shall be as shown on the drawings.

3.2 INSTALLATION

Installation and assembly of tackboards shall be in accordance with manufacturer's printed instructions. Prefit panels at factory, disassemble for delivery, and reassemble at site. Use splines at joints to maintain surface alignment. Concealed fasteners shall be used. Tackboards and bulletin boards shall be attached to the walls with suitable devices to anchor each unit. The Contractor shall furnish and install trim items, accessories and miscellaneous items in total, including but not limited to hardware, grounds, clips, backing materials, adhesives, brackets, and anchorages incidental to or necessary for a sound, secure, complete and finished installation. Installation shall not be initiated until completion of room painting and finishing operations. Tackboards and bulletin boards shall be installed in locations and at mounting heights indicated, and shall be installed level and plumb, and if applicable doors shall be aligned and hardware shall be adjusted. Damaged units shall be repaired or replaced by the Contractor as directed by the Contracting Officer.

3.3 CLEANING

Writing surfaces shall be cleaned in accordance with manufacturer's instructions.

-- End of Section --

SECTION 10430

EXTERIOR SIGNAGE

06/01

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ALUMINUM ASSOCIATION (AA)

AA DAF-45 (1997) Designation System for Aluminum Finishes

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B 26 (1999) Aluminum-Alloy Sand Castings

ASTM B 108 (1998) Aluminum-Alloy Permanent Mold Castings

ASTM B 209 (1996) Aluminum and Aluminum-Alloy Sheet and Plate

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM AMP 505 (1988) Metal Finishes Manual for Architectural and Metal Products

1.2 GENERAL

All exterior signage shall be provided by a single manufacturer. Exterior signage shall be of the design, detail, sizes, types, and message content shown on the drawings, shall conform to the requirements specified, and shall be provided at the locations indicated. Signs shall be complete with lettering, framing as detailed, and related components for a complete installation. Recyclable materials shall conform to EPA requirements in accordance with Section 01670 RECYCLED/RECOVERED MATERIALS.

1.3 WIND LOAD REQUIREMENTS

Exterior signage shall be designed to withstand 160 km/h (100 mph) windload.

1.4 CHARACTER PROPORTIONS AND HEIGHTS

Letters and numbers on indicated signs for handicapped-accessible buildings shall have a width-to-height ratio between 3:5 and 1:1 and a stroke-width-to-height ratio between 1:5 and 1:10. Characters and numbers on indicated signs shall be sized according to the viewing distance from which they are to be read. The minimum height is measured using an upper case letter "X". Lower case characters are permitted.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government: "A" for Government, and "E" for design office. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Drawings

Approved Detail Drawings; G, RE, AE.

Drawings showing elevations of each type of sign; dimensions, details, and methods of mounting or anchoring; shape and thickness of materials; and details of construction. A schedule showing the location, each sign type, and message shall be included.

SD-03 Product Data

Modular Exterior Sign age System; G, RE, AE.

Manufacturer's descriptive data and catalog cuts.

Installation; G, RE, AE.

Manufacturer's installation instructions and cleaning instructions.

Exterior Signs; G, RE, AE.

Exterior signage schedule in electronic media with spread sheet format. Spread sheet shall include sign location, sign type, and message

Wind Load Requirements; G, RE, AE.

Design analysis and supporting calculations performed in support of specified signage

SD-04 Samples

Exterior Signs; G, RE, AE.

One sample of each type of sign. Each sample shall consist of a complete sign panel with letters and symbols. Samples may be installed in the work, provided each sample is identified and location recorded. Two samples of manufacturer's standard color chips for each material requiring color selection and 300 mm (12 inches) square sample of sign face color sample.

SD-10 Operation and Maintenance Data

Protection and Cleaning; FIO.

Six copies of maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides. The instructions shall include simplified diagrams for the equipment as installed.

1.6 QUALIFICATIONS

Signs and dimensional letters shall be the standard product of a

manufacturer regularly engaged in the manufacture of the products. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening.

1.7 DELIVERY AND STORAGE

Materials shall be wrapped for shipment and storage, delivered to the jobsite in manufacturer's original packaging, and stored in a clean, dry area in accordance with manufacturer's instructions.

1.8 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

PART 2 PRODUCTS

2.1 MODULAR EXTERIOR SIGNAGE SYSTEM

Exterior signage shall consist of a system of coordinated directional, identifications, and regulatory type signs located where shown. Dimensions, details, materials, message content, and design of signage shall be as shown.

2.2 DIMENSIONAL BUILDING LETTERS

2.2.1 Fabrication

Letters shall be fabricated from cast aluminum. Letters shall be cleaned by chemical etching or cleaned ultrasonically in a special degreasing bath. Letters shall be packaged for protection until installation.

2.2.2 Typeface

Typeface shall be Century Bold.

2.2.3 Size

Letter size shall be 200 mm (8 inches).

2.2.4 Finish

Anodized aluminum.

2.2.5 Mounting

Threaded studs, of number and size as recommended by manufacturer, shall be secured in quick-setting mortar for concealed anchorage. Letters which project from the building line shall have stud spacer sleeves. Letters, studs, and sleeves shall be of the same material. Templates for mounting shall be supplied.

2.3 ALUMINUM ALLOY PRODUCTS

Aluminum alloy products shall conform to ASTM B 209M ASTM B 209 for sheet or plate, ASTM B 221M ASTM B 221 for extrusions and ASTM B 26/B 26M or ASTM B 108 for castings. Aluminum extrusions shall be provided at least 3 mm (1/8 inch) thick and aluminum plate or sheet at least 16 gauge thick. Welding for aluminum products shall conform to AWS C1.1m/C1.1.

2.4 ANODIC COATING

Anodized finish shall conform to AA DAF-45 as follows:

Clear (natural) designation AA-M10-C22-A31, Architectural Class II 0.010 mm (0.4 mil) or thicker.

2.5 ANCHORS AND FASTENERS

Exposed anchor and fastener materials shall be compatible with metal to which applied and shall match in color and finish and shall be non-rusting, non-corroding, and non-staining. Exposed fasteners shall be tamper-proof.

2.6 SHOP FABRICATION AND MANUFACTURE

2.6.1 Factory Workmanship

Work shall be assembled in the shop, as far as practical, ready for installation at the site. Work that cannot be shop assembled shall be given a trial fit in the shop to ensure proper field assembly. Holes for bolts and screws shall be drilled or punched. Drilling and punching shall produce clean, true lines and surfaces. Exposed surfaces of work shall have a smooth finish and exposed riveting shall be flush. Fastening shall be concealed where practical.

2.6.2 Dissimilar Materials

Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, the surfaces shall be protected with a coat of asphalt varnish or a coat of zinc-molybdate primer to prevent galvanic or corrosive action.

2.6.3 Shop Painting

Surfaces of miscellaneous metal work, except nonferrous metal, corrosion resisting steel, and zinc-coated work, shall be given one coat of zinc-molybdate primer or an approved rust-resisting treatment and metallic primer in accordance with manufacturer's standard practice. Surfaces of items to be embedded in concrete shall not be painted. Upon completion of work, damaged surfaces shall be recoated.

2.7 COLOR, FINISH, AND CONTRAST

For buildings required to be handicapped-accessible, the characters and background of signs shall be eggshell, matte, or other non-glare finish. Characters and symbols shall contrast with their background - either light characters on a dark background or dark characters on a light background.

PART 3 EXECUTION

3.1 INSTALLATION

Signs, plaques, or dimensional numbers shall be installed in accordance with approved manufacturer's instructions at locations shown on the approved detail drawings. Signs shall be installed plumb and true at mounting heights indicated, and by method shown or specified.

3.1.1 Anchorage

Anchorage and fastener materials shall be in accordance with approved manufacturer's instructions for the indicated substrate.

3.1.2 Protection and Cleaning

The work shall be protected against damage during construction. Sign surfaces shall be cleaned in accordance with manufacturer's instructions. After signs are completed and inspected, the Contractor shall cover all project identification, directional, and other signs which may mislead the public. Covering shall be maintained until instructed to be removed by the Contracting Officer or until the facility is to be opened for business. Signs shall be cleaned, as required, at time of cover removal.

-- End of Section --

SECTION 10601

AFTER ACTION REVIEW (AAR)/CONFERENCE SEATING

10/00

PART 1 GENERAL

Seating units shall have: welded steel frames supporting a solid core continuous table top with modesty panels and surface across to power and data outlets, self-returning floor mounted swivel seats with swing-away arms. Seating shall be "University Seating" as manufactured by KI, Inc., Green Bay, WI, or equivalent. This specification, which is based on product manufactured by KI, Inc., establishes the minimum quality of seating acceptable and does not preclude other qualified manufacturers from bidding.

1.1 Summary

A. Work included in this section: Provision of floor mounted fixed seating swivel seats on swing arms including attachment, or other work required for installation unless otherwise noted.

B. Related Sections:

1. Section 16414, ELECTRICAL WORK, INTERIOR.
2. Section 16710, PREMISE DISTRIBUTION SYSTEM.
3. Floor mounting anchors.
4. Data/Communications cabling and jacks.

1.2 SUBMITTALS

A. Product data including manufacturer's assembly instructions.

B. Shop Drawings with layouts by manufacturers.

C. Field verified dimensions and conditions directly affecting the product or installation.

D. Letter of Certification from manufacturer stating on-site successful completion of manufacturer's assembly training on special furniture.

E. Samples:

1. Minimum 125 mm by 125 mm (5 inches by 5 inches) fabric samples.
2. Finish color selection.
3. Other samples as requested.

1.3 Delivery, Storage, and Handling

A. Store delivered in clean, safe, dry area.

1.4 Scheduling

A. Schedule installation of items to occur after application of exposed finishes wherever installation will not damage exposed finish surfaces and completion of finishes will not impede installation.

PART 2 PRODUCTS

2.1 Fixed Seating

A. DESCRIPTION: Floor mounted steel frames which support solid core continuous table tops with surface mounted power and data outlets and self-returning swivel seats and including but not limited to:

1. Table tops shall be 30" deep, 1-1/4 " thick, warp-resistant construction with a center core of 1-1/8" thick Novoply particleboard, minimum of 45 pounds PCF density to prevent warping. Top surface to be a minimum of .040" thick high-pressure laminate meeting NEMA standards with a .020" thick bottom.
2. K&V Tite Joint fasteners, hardwood spline, and steel splice plates shall be used to provide a virtual "seamless top."
3. The 8-wire harness of flexible conduit shall distribute power between the power/data modules and the power infeed. The harness shall be enclosed in a plastic trough with a metal divider to separate power and communication or data cables.
4. Modesty Panels shall be in tiered classrooms or as otherwise specified. Modesty Panels shall be nominal 0.810" which warp-resistant construction in straight or curved configuration. Center core shall be 0.76" thick Novoply particleboard, minimum of 45 lbs PCF density. The front surface shall be minimum of .040" thick high-pressure laminate meeting NEMA standards and the back surface, 0.020" thick backing sheet. The modesty panel ends shall have corners with minimum 1-1/2 radius.
5. PowerUp power and data distribution systems provides surface mounted power and data access for laptop users.
6. Seat and backrest shall be a textured two-piece injection-molded thermoplastic. Seat and backrest are joined by a maintenance-free steel hinge with integral spring mechanism which allows the upper back to articulate for comfort and ergonomics.
7. Seating fabric shall be KI Grade 1.
8. Seating to utilize swing arms for 21" seat spacing.
9. Powder coated steel frames provide maximum durability.

B. ADDITIONAL POWER AND DATA REQUIREMENTS: The After Action Review (AAR) assembly room seating shall allow for power and data cable access. The power and data shall be isolated from each other with a barrier. The base cutout shall allow bottom access to the furniture. The power outlet shall be one duplex 120 volts, 15 amps and two data outlet shall be RJ-45 (Cat 5e). The power installation shall be U.L. list. Power and data outlet shall be located to avoid accidental spill in to receptacles and data ports. The power and data outlets shall have a positive locking device in the open position to allow the unit to remain open when in use and shall be able to close when not in use. Data jacks shall remain stationary to avoid excess wear and tear on the wire connections. The contractor shall coordinate the conduit layout for all input feeds to the assembly seating. (See electrical

and telecommunication plans for additional information) All furniture entrances poke up shall consist of wide sweep radius elbows min. 1 1/4 inch. Intermixing of power and data is not allowed.

C. PRODUCT: University Seating as manufactured by KI, Green Bay, WI or equal as approved by the Architect and the Contracting Officer.

2.2 Finishes

All finishes and colors to be selected by Architect and the Contracting Officer .

PART 3 EXECUTION

3.1 Preparation

A. Coordination details with other work supporting, adjoining, or otherwise contracting items as required to insure proper installation.

B. Examine construction to verify that:

1. Dimensions are correct to manufacturer's specifications.

C. Do not install items until unsatisfactory conditions have been corrected.

3.2 Installation

A. Install items in strict accordance to manufacturer's Assembly Instructions and approved Shop Drawings.

-- End of Section --

SECTION 10800A

TOILET ACCESSORIES

08/98

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 1036 (1991) Flat Glass

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-2380 (Rev A) Dispenser, Paper Towel

CID A-A-2398 (Rev B) Curtain, Shower and Window (Metric - SI)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Finishes; G, RE
Accessory Items; G, RE

Manufacturer's descriptive data and catalog cuts indicating materials of construction, fasteners proposed for use for each type of wall construction, mounting instructions, operation instructions, and cleaning instructions.

SD-04 Samples

Finishes; G, RE
Accessory Items; G, RE

One sample of each accessory proposed for use. Approved samples may be incorporated into the finished work, provided they are identified and their locations noted.

SD-10 Operation and Maintenance Data

Electric Hand Dryer; FIO

Four complete copies of maintenance instructions listing routine

maintenance procedures and possible breakdowns and repairs. Instructions shall include simplified wiring and control diagrams and other information necessary for unit maintenance.

1.3 DELIVERY, STORAGE, AND HANDLING

Toilet accessories shall be wrapped for shipment and storage, delivered to the jobsite in manufacturer's original packaging, and stored in a clean, dry area protected from construction damage and vandalism.

1.4 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a 1 year period shall be provided.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

Toilet accessories shall be provided where indicated in accordance with paragraph SCHEDULE. Porcelain type, tile-wall accessories are specified in Section 09310 CERAMIC TILE. Each accessory item shall be complete with the necessary mounting plates and shall be of sturdy construction with corrosion resistant surface.

2.1.1 Anchors and Fasteners

Anchors and fasteners shall be capable of developing a restraining force commensurate with the strength of the accessory to be mounted and shall be suited for use with the supporting construction. Exposed fasteners shall have oval heads and be of tamperproof design and shall be finished to match the accessory.

2.1.2 Finishes

Except where noted otherwise, finishes on metal shall be provided as follows:

Metal	Finish
Stainless steel	No. 4 satin finish
Carbon steel, copper alloy, and brass	Chromium plated, bright

2.2 ACCESSORY ITEMS

Accessory items shall conform to the requirements specified below.

2.2.1 Grab Bar (GB)

Grab bar shall be 18 gauge, 32 mm (1-1/4 inches) OD Type 304 stainless steel. Grab bar shall be form and length as indicated. Concealed mounting flange shall have mounting holes concealed. Grab bar shall have satin finish. Installed bars shall be capable of withstanding a 2.225 kN (500 pound) vertical load without coming loose from the fastenings and without obvious permanent deformation. Space between wall and grab bar shall be 38 mm (1-1/2 inches).

2.2.2 Mirrors, Glass (MG)

Glass for mirrors shall be Type I transparent flat type, Class 1-clear. Glazing Quality q1 6 mm (1/4 inch) thick conforming to ASTM C 1036. Glass shall be coated on one surface with silver coating, copper protective coating, and mirror backing paint. Silver coating shall be highly adhesive pure silver coating of a thickness which shall provide reflectivity of 83 percent or more of incident light when viewed through 6 mm (1/4 inch) thick glass, and shall be free of pinholes or other defects. Copper protective coating shall be pure bright reflective copper, homogeneous without sludge, pinholes or other defects, and shall be of proper thickness to prevent "adhesion pull" by mirror backing paint. Mirror backing paint shall consist of two coats of special scratch and abrasion-resistant paint and shall be baked in uniform thickness to provide a protection for silver and copper coatings which will permit normal cutting and edge fabrication.

2.2.3 Mirror, Metal (MM)

Metal mirror shall be bright polished stainless steel, mirror quality, 0.94 mm (0.037 inch) minimum thickness, edges turned back 6 mm (1/4 inch) and recess fitted with tempered hardboard backing, and theft-proof fasteners. Size shall be in accordance with the drawings.

2.2.4 Mirror, Tilt (MT)

Tilt mirror shall be surface mounted and shall provide full visibility for persons in a wheelchair. Mirror shall have fixed tilt, extending at least 100 mm (4 inches) from the wall at the top and tapering to 25 mm (1 inch) at the bottom. Size shall be in accordance with the drawings. Glass for mirrors shall conform to ASTM C 1036 and paragraph Glass Mirrors.

2.2.5 Sanitary Napkin Disposer (SND)

Sanitary napkin disposal shall be constructed of Type 304 stainless steel with removable leak-proof receptacle for disposable liners. Fifty disposable liners of the type standard with the manufacturer shall be provided. Receptacle shall be retained in cabinet by tumbler lock. Disposer shall be provided with a door for inserting disposed napkins, and shall be surface mounted.

2.2.6 Sanitary Napkin and Tampon Dispenser (SNTD)

Sanitary napkin and tampon dispenser shall be surface mounted. Dispenser, including door shall be Type 304 stainless steel and shall dispense both napkins and tampons with a minimum capacity of 20 each. Dispensing mechanism shall be for coin operation. Coin mechanisms shall have minimum denominations of 10 cents, 25 cents, 50 cents. Doors shall be hung with a full-length corrosion-resistant steel piano hinge and secured with a tumbler lock. Keys for coin box shall be different from the door keys.

2.2.7 Soap Dispenser (SD)

Soap dispenser shall be surface mounted, liquid type consisting of a vertical Type 304 stainless steel tank with holding capacity of 1.2 L (40 fluid ounces) with a corrosion-resistant all-purpose valve that dispenses liquid soaps, lotions, detergents and antiseptic soaps.

2.2.8 Shelf, Metal, Heavy Duty (SMHD)

Heavy duty metal shelf shall be minimum of 18 gauge stainless steel with hemmed edges. Shelves over 750 mm (30 inches) shall be provided with intermediate supports. Supports shall be minimum of 16 gauge, shall be welded to the shelf, and shall be spaced no more than 750 mm (30 inches) apart.

2.2.9 Toilet Tissue Dispenser, Jumbo (TTDJ)

Toilet tissue dispenser shall be surface mounted with 2 rolls of jumbo tissue. Cabinet shall be fabricated of Type 304, 18 gauge stainless steel with Type 304, 20 gauge stainless steel door. Cover shall have key lock.

2.2.10 Toilet Seat Cover Dispenser (TSCD)

Toilet seat cover dispensers shall be Type 304 stainless steel and shall be surface mounted. Dispenser shall have a minimum capacity of 500 seat covers.

2.2.11 Electric Hand Dryer (EHD)

Electric hand dryer shall be wall mounted and shall be designed to operate on 110/125 volts, 60 cycle, single phase alternating current with a heating element core rating of not more than 2100 watts. Dryer housing shall be of single piece construction and shall be chrome plated steel.

PART 3 EXECUTION

3.1 INSTALLATION

Toilet accessories shall be securely fastened to the supporting construction in accordance with the manufacturer's approved instructions. Accessories shall be protected from damage from the time of installation until acceptance.

3.2 CLEANING

Material shall be cleaned in accordance with manufacturer's recommendations. Alkaline or abrasive agents shall not be used. Precautions shall be taken to avoid scratching or marring of surfaces.

3.3 SCHEDULE

Room or Space	Accessories Required										
	MG	MH	MT	SMHD	SD	TCSD	TTDJ	EHD	GB	SND	SNTD
Rms 115 & 247 (Women's Toilets)	X	X	X	X	X	X	X	X	X	X	X
Rmn 138 & 236 (Men's Toilets)	X	X	X	X	X	X	X	X	X		

-- End of Section --

SECTION 10999

MISCELLANEOUS SPECIALTIES

PART 1 GENERAL

1.1 SCOPE

Furnish, deliver to building, unloaded in designated storage areas and, where specifically called out, install the following specialty items. Where specialty item is to be installed under another trade it shall be specified as such below.

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Descriptive Literature; FIO.

Manufacturer's printed data, catalog cuts, and installation instructions.

SD-04 Drawings

Wardrobe Units; G, RE.

Drawings showing plans, elevations, full size sections, details, assembly coding for erection, thickness and gauges of materials, anchors and fastening, fittings, accessories and connections with contiguous work.

1.3 SELECTION OF MANUFACTURER

Manufacturer's reference to equipment and materials indicated herein are for information only and is not intended to limit selection to the manufacturer noted.

PART 2 PRODUCTS

2.1 FIRE EXTINGUISHER CABINET

Furnish where indicated on the drawings cabinets of the size and type shown. Door and trim shall be one piece construction with 18 gauge steel box. Provide door handle with rollers. Finish shall be red epoxy coated trim and door with white vertical letters on door "FIRE EXTINGUISHER."

2.1.1 MOP AND BROOM HOLDER

Mop strip with mop and broom holders shall be furnished and installed where indicated on the drawings. Mop strip shall be constructed of 20 gauge, 18-8 type 304 stainless steel, exposed surface, satin finished. Mop holders shall be molded with serrated rubber cam holders, spring loaded type. Holders shall accommodate mop and broom handles from 3/4 inches to

1/4 inches diameter. Provide five (5) holders for each strip.

-- End of Section --

SECTION 11162A

LOADING DOCK LEVELER

08/00

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Standard Products

Materials and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening. Equipment shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the site.

1.1.2 Nameplates

As a minimum, each loading dock leveler shall have the manufacturer's name, address, type or style, model or serial number, rated capacity, and catalog number on a plate secured to the equipment.

1.1.3 Verification of Dimensions

After becoming familiar with all details of the work, the Contractor shall verify all dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing the work.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Loading Dock Levelers; G, RE.

Drawings with complete wiring, schematic diagrams, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Detail drawings shall show proposed layout and anchorage of equipment and appurtenances. Detail drawings shall show the concrete pit details including flush edge angles, dock bumpers, and sloped pit bottom; method of mounting and anchoring; and location of control stations and disconnect switches. For vertical, edge-of-dock, and free-standing board dock levelers, drawings shall show details of required pit or foundation construction and dock bumpers and structural shapes installation, in lieu of concrete pit details.

SD-03 Product Data

Loading Dock Levelers; FIO.

Data including a complete list of equipment and materials, manufacturer's descriptive and technical literature, performance charts and curves, catalog cuts, and installation instructions.

SD-10 Operation and Maintenance Data

Loading Dock Levelers; FIO.

Six (6) copies of operation and six (6) copies of maintenance manuals for the equipment furnished. One complete set shall be furnished prior to performance testing and the remainder shall be furnished upon acceptance. Operating manuals shall detail the step-by-step procedures required for system startup, operation, and shutdown. Operating manuals shall include the manufacturer's name, model number, parts list, and brief description of all equipment and their basic operating features. Maintenance manuals shall list routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides. Maintenance manuals shall include piping and equipment layout and simplified wiring and control diagrams of the system as installed. After approval of the detail drawings, and not later than 2 (two) months prior to the date of beneficial occupancy, spare parts data for each different item of material and equipment specified are required. The data shall include a complete list of parts and supplies, with current unit prices and source of supply and a list of the parts recommended by the manufacturer to be replaced after 1 and 3 year(s) of service.

1.3 DELIVERY AND STORAGE

Equipment delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, or other contaminants.

PART 2 PRODUCTS

2.1 LOADING DOCK LEVELERS

Loading dock levelers shall be permanent type, and shall have minimum performance characteristics based on the following:

a. Fork Lift Loads:

- (1) Leveler shall be designed to accommodate 4 wheel fork trucks.
- (2) Leveler shall be designed to handle 13,500 kg (30,000 lbs) gross dynamic load.

2.1.1 Type

Loading dock leveler shall be electrohydraulic type with electric motor and hydraulic pump operating a hydraulic cylinder that adjusts dock leveler board position. A truck restraint system shall be coordinated with the dock leveler via an interconnect function such that the restraint and dock leveler will engage with a single push-button, if a powered trailer restraint is selected to lock truck or trailer into position during loading and for overnight security. A visual signal shall be incorporated to inform dock operator and driver of locked or unlocked status.

2.1.2 Operating Range

The outer end of loading dock leveler shall be adjustable in height, providing a board whose incline can be adjusted to suit the height of truck and trailer beds. Board end shall have a minimum of 305 mm (12 inches) of vertical adjustment.

2.1.3 Lip Extension

Each loading dock leveler shall include provisions so that its end lip may be extended from a retracted position to an extended position beyond the forward edge of the platform bumpers to rest on the bed of a truck or trailer a minimum of 406 mm (16 inches). Lip extension shall be 406 mm (16 inches).

2.1.4 Tilt Allowance

Each loading dock leveler shall provide automatic compensation, with board loaded, for out-of-level truck bed condition (difference in elevation from side to side at the rear of the truck bed) of up to 102 mm over the width of the board.

2.1.5 Load Compensation

Mechanical type dock levelers shall be manual load compensation for truck beds lowered below dock height. When the end lip is extended so as to rest on the bed of a truck or trailer, the leveler platform with extended end lip shall semi automatically be adjusted up or down with the movement of the truck or trailer bed resulting from the compression of the truck or trailer springs, dependant on type of leveler.

2.1.6 Automatic Safety Device

2.1.6.1 Mechanical

When in use, if dock leveler is above dock, an automatic safety device shall be provided to prevent a drop of more than 50 mm at the outer end of the board, should a truck or trailer be moved away leaving the board unsupported.

2.1.6.2 Electrohydraulic

A hydraulic tamper proof check valve shall be provided to prevent a drop of more than 76 mm at the outer end of the board, should the truck or trailer be moved away leaving the board unsupported. This safety device shall be effective with any load on the board up to the fully dynamic rated capacity of the loading dock leveler.

2.1.7 Dimensions

The live load carrying surface of the leveler shall be nominal 1.85 meters (6 feet) wide and 2.44 meters (8 feet) long with end lip retracted.

2.1.8 Motor

Each electrohydraulic loading dock leveler shall be equipped with a totally enclosed non-ventilated (TENV) squirrel cage induction electric motor, three phase, 480 volts, 60 Hz, which shall not exceed its rated

capacity under full load conditions of the loading dock leveler.

2.1.9 Controls

Each electrohydraulic loading dock leveler shall be equipped with a power unit installed under the leveler proper as an integral part of the loading dock leveler. Each loading dock leveler shall be controlled by a heavy duty push button station located as shown with an "UP" or "RAISE" button. To prevent accidental operation and damage, each button shall be recessed in its station or protected by a projected peripheral collar. Station push button shall be indelibly identified by means of cast or etched letters on the station. Push button station shall be of rugged design and positive in operation; no less than NEMA Type 4 enclosure shall be furnished. Buttons shall be constant pressure type so that operation will cease immediately on release of button. Electrical work shall conform to Section 16415 ELECTRICAL WORK, INTERIOR.

2.1.10 Dock Bumpers

A minimum of two high-impact resistant molded rubber or laminated rubber dock bumpers shall be furnished with each loading dock leveler.

2.2 OPERATION

Continuous pressure on the operating button shall cause the outer end of the board to raise and thus permit the operator to adjust the board incline as required to suit the level of the bed of a particular truck or trailer. Control shall activate board automatically to raise to maximum height and lower to rest on truck or trailer bed. The operator may interrupt cycle to lower board to resting position when desired. End lip on board shall extend hydraulically, automatically during board operation or by separate control button on panel. Dock leveler shall automatically return to storage position when truck or trailer moves away.

2.3 CORROSION PROTECTION AND PAINTING

2.3.1 Fasteners

Bolts, screws, nuts, and washers shall be coated with hot-dip zinc or cadmium or made of corrosion resistant metal.

2.3.2 Ferrous Metal Surfaces

Ferrous metal surfaces, including coated ferrous and inaccessible ferrous surfaces, (but not including bearings, gear contact surfaces, parts protected by lubrication, or other surfaces not usually painted or coated) shall be cleaned, shot panned, and the base metal protected with an application of 99.9% pure zinc coating with a thickness of 0.010 to 0.012 IAW ANSI/ANS C2.18-93. and the base metal protected with an application of Rustoleum paint with a thickness of 0.062 to 0.075 mm (2.5 to 3 mils) followed by a final coat of standard primer with a thickness of 0.062 to 0.075 mm (2.5 to 3 mils) .

2.3.3 Nonferrous Parts

Nonferrous parts shall be protected against corrosion as necessary.

2.3.4 Dissimilar Metals

Dissimilar metals, which may be subject to electrolysis upon contact, shall be separated by electrolytically inactive material.

PART 3 EXECUTION

3.1 INSTALLATION

Installation shall be as indicated and in accordance with manufacturer's installation instructions. Loading dock leveler and accessories shall operate easily and perform reliably. Unsatisfactory operation shall result in correction adjustment, or reinstallation until satisfactory performance and operation is achieved and installation is acceptable to the Contracting Officer.

-- End of Section --

SECTION 12320

CABINETS AND COUNTERTOPS

05/98

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 638 (1997) Tensile Properties of Plastics

ASTM E 84 (1997a) Surface Burning Characteristics of Building Materials

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.9 (1994) Cabinet Hardware

KITCHEN CABINET MANUFACTURERS ASSOCIATION (KCMA)

KCMA ANSI/KCMA A161.1 (1995) Performance & Construction Standards for Kitchen and Vanity Cabinets

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3 (1995) High-Pressure Decorative Laminates

1.2 DESIGN

Cabinets shall be wood, factory-fabricated and finished in the manufacturer's standard sizes and finishes of the type, design, and configuration indicated. Cabinets shall be constructed as specified and shall meet the requirements of KCMA ANSI/KCMA A161.1. Wall and base cabinet assemblies shall consist of individual units joined into continuous sections. Fastenings shall be accomplished to permit removal and replacement of individual units without affecting the remainder of the installation. Counters shall be provided with watertight sink rim when indicated. Drawers shall be removable and shall be equipped with position stops to avoid accidental complete withdrawals. Shelves shall be fixed or adjustable as indicated.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government: "A" for field office, "E" for design office. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Installation; G, RE.

Drawings showing each type of cabinet and related item, and clearly indicating the complete plan, location, and elevations of the cabinets and accessories and pertinent details of construction, fabrication, and attachments.

SD-03 Product Data

Cabinets Countertops; G AE.

Manufacturer's printed data, catalog cuts, installation and cleaning instructions.

SD-04 Samples

Cabinets and Countertops; G RA.

In lieu of individual samples, complete minimum size cabinets may be furnished as samples. Mock-up units are not acceptable. Samples shall be of sufficient size to show color, pattern, and method of assembly.

- a. Countertop and backsplash - One section, containing both.
- b. Door and drawer front - One of each, with hardware mounted.
- c. Countertop color samples approximately 50 x 75 mm (2 x 3 inches) size.

SD-06 Test Reports

Cabinets and Countertops; G A.

Test reports certifying that all cabinets comply with the requirements of KCMA ANSI/KCMA A161.1. Tests shall be conducted by independent laboratories approved by KCMA. KCMA certification seals affixed to the cabinets will be accepted in lieu of certified test reports.

1.4 DELIVERY AND STORAGE

Cabinets shall be delivered to the jobsite wrapped in a protective covering. Cabinets shall be stored in accordance with manufacturer's recommendations in an adequately ventilated, dry location that is free of dust, water, or other contaminants and in a manner to permit access for inspection and handling. Cabinets shall be handled carefully to prevent damage to the surfaces. Damaged items that cannot be restored to like-new condition shall be replaced.

PART 2 PRODUCTS

2.1 CABINETS

Wall and base cabinets shall be of the same construction and same outside appearance. Door design shall be solid flush face from vendors standard

styles. Shelves shall be fixed or fully adjustable as indicated. Adjustable shelves shall be capable of adjusting on approximately 75 mm (3 inch) increments. Shelves shall be supported by self-locking clips or wood dowels. Dowels shall be approximately 8 mm (5/16 inch) in diameter by 40 mm (1-9/16 inches) long. Dowels shall be inserted into borings for the shelf adjustments. Shelves shall be minimum 13 mm (1/2 inch) thick plywood or minimum 13 mm (1/2 inch) thick 20 kg (45 pound) density particle board. Drawer fronts shall be 20 kg (45 pound) density particle board or hardwood plywood to match cabinet door construction.

2.1.1 Frameless Type Cabinets

The cabinets shall be of frameless design and construction. Cabinets shall be constructed of minimum 16 mm (5/8 inch) thick, 20 kg (45 pound) density particle board end and floor panels. Cabinet back shall be constructed of minimum 5 mm (3/16 inch) thick, 20 kg (45 pound) density particle board. Hanging rails shall be doweled and glued to end panels, then fastened and hot melt glued to cabinet back. Toe kick plates shall be recessed, doweled and glued to the end panels. Top and bottom corners shall be braced with either hardwood blocks glued together with water resistant glue and nailed in place, or fastened with metal or plastic corner braces.

2.2 COUNTERTOPS AND BACKSPLASH

2.2.1 High-Pressure Laminated Plastic Clad Countertops

Clad countertop and backsplash shall be constructed of 19 mm (3/4 inch) thick plywood or 19 mm (3/4 inch) thick, 20 kg density particle board core and shall be post formed cove type or fully formed type. Cove type shall be a single unit with self-edging and plastic laminate coved at the juncture of the countertop and backsplash. Fully formed type or square edge shall be a unit with shaped edges using wood nose molding at counter edge and shall include a separate backsplash. Backsplash shall be not less than 90 mm (3-1/2 inches) high. Edging and trim shall consist of plastic laminate cut and fitted to all exposed edges. End splashes constructed of 19 mm (3/4 inch) plywood or 19 mm (3/4 inch) thick, 20 kg (45 pound) density particle board core shall be supplied. Continuous sheets of longest lengths practicable shall be provided. Joints in surface sheeting shall be tight and flush and held to a practicable minimum. When the countertop and backsplash are two separate units, GP50 plastic laminate shall be used. When the countertop and backsplash are one unit, PF42 plastic laminate shall be used. Plastic laminate shall conform to the requirements of NEMA LD 3 and plastic laminate adhesive shall be contact type applied to both surfaces. For fully formed and cove type countertops, the post-forming plastic laminate shall not be bent to a radius smaller than the limit recommended by the plastic manufacturer.

2.3 Sink

Sink rims shall be of the corrosion resistant steel clamping type, sized to the sink and a standard product of a manufacturer regularly producing this type of equipment.

2.4 FINISH

2.4.1 Cabinet Finish

Cabinets shall be provided with a factory-applied durable finish in accordance with KCMA ANSI/KCMA A161.1 requirements and of a type standard

with the manufacturer. Exposed exterior surfaces shall be covered with melamine plastic finish.

2.4.2 Melamine Laminated Interior Cabinet Finish

Plywood, particle board or tempered hardboard cabinet backs shall be finished with a melamine laminate on the exposed side. Particle board shelves shall be covered on both sides with a laminated melamine finish. Melamine laminate shall conform to the requirements of NEMA LD 3 and laminate adhesive shall be contact type applied to both surfaces.

2.4.3 Backer Sheets

Backer Sheets of high pressure plastic laminate, shall conform to NEMA LD 3, Grade BK20 and shall be applied to the underside of all core material.

2.5 HARDWARE

Hardware shall conform to BHMA A156.9, shall be suitable for kitchen cabinet use, and shall include all miscellaneous hardware for a complete installation. Door hinges shall be self-closing type. Drawer runners shall have nylon rollers standard with the manufacturer. Hardware and fastenings for doors and drawers with particle board cores shall be of the through-bolt type.

2.6 COLOR, TEXTURE, AND PATTERN

Design, color, and finish shall be selected from manufacturer's standard by the Contracting Officer.

PART 3 EXECUTION

3.1 INSTALLATION

Cabinets shall be installed level, plumb, and true to line, and shall be attached to the walls or floors with suitable devices to securely anchor each unit. Countertops, accessories, and hardware shall be installed as indicated on the drawings. Installation shall be in accordance with the manufacturer's approved printed instructions. The inner edge of sink cut-outs in laminated plastic tops shall be painted with a coat of semigloss enamel paint and sink flanges shall be set in a bed of sealant. Closer and filler strips and finish moldings shall be provided as required.

Prior to final acceptance, doors shall be aligned, and hardware shall be adjusted.

3.2 CLEANING

Cabinet and countertop surfaces shall be cleaned in accordance with manufacturer's instructions.

-- End of Section --

SECTION 12490

WINDOW TREATMENT

01/98

PART 1 WORK DESCRIPTION

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

FEDERAL SPECIFICATIONS (FS)

FS AA-V-00200 (Rev B) Venetian Blinds

NATIONAL FIRE PROTECTION (NFPA)

NFPA 701 (1996) Methods of Fire Tests for
Flame-Resistant Textiles and Films

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government: "A" for field office and "E" for design office. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Approved Detail Drawings; G RE.

Drawings showing fabrication and installation details. Drawings shall show layout and locations of track, direction of draw, mounting heights, and details.

SD-03 Product Data

Window Treatments; G, RE.
Hardware; G, RE.

Manufacturer's data composed of catalog cuts, brochures, product information, and maintenance instructions.

SD-04 Samples

Window Treatments; G, RE.

Three samples of each type and color of window treatment. Blind slats or louvers shall be 150 mm (6 inches) in length for each color. Track shall be 150 mm (6 inches) in length. Shade material shall be minimum 150 x 150 mm (6 x 6 inches) in size.

1.3 GENERAL

Window treatment shall be provided, complete with necessary brackets, fittings, and hardware. Each window treatment type shall be a complete unit provided in accordance with paragraph WINDOW TREATMENT PLACEMENT SCHEDULE. Equipment shall be mounted and operated as indicated. Windows to receive a treatment shall be completely covered. The Contractor shall take measurements at the building and shall be responsible for the proper fitting and hanging of the equipment.

1.4 DELIVERY, STORAGE, AND HANDLING

Components shall be delivered to the jobsite in the manufacturer's original packaging with the brand or company name, item identification, and project reference clearly marked. Components shall be stored in a dry location that is adequately ventilated and free from dust, water, or other contaminants and shall have easy access for inspection and handling. Materials shall be stored flat in a clean dry area with temperature maintained above 10 degrees C (50 degrees F).

1.5 FIELD MEASUREMENTS

The Contractor shall become familiar with details of the work, verify dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing the work.

1.6 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a 1 year period shall be provided.

PART 2 PRODUCTS

2.1 WINDOW BLINDS

Each blind, including hardware, accessory items, mounting brackets and fastenings, shall be provided as a complete unit produced by one manufacturer. All parts shall be one color unless otherwise shown, and match the color of the blind slat. Steel features shall be treated for corrosion resistance.

2.1.1 Horizontal Blinds

Horizontal blinds shall conform to FS AA-V-00200, Type II (25 mm (1 inch) slats), except as modified below. Blind units shall be capable of nominally 180 degree partial tilting operation and full-height raising. Blinds shall be inside mount.

2.1.1.1 Head Channel and Slats

Head channel shall be steel 0.61 mm (0.024 inch) for Type II. Slats shall be aluminum, not less than 0.203 mm (0.008 inch) thick, and of sufficient strength to prevent sag or bow in the finished blind. A sufficient amount of slats shall be provided to assure proper control, uniform spacing, and adequate overlap.

2.1.1.2 Controls

The slats shall be tilted by a transparent tilting wand, hung vertically by

its own weight, and shall swivel for easy operation. The tilter control shall be of enclosed construction. Moving parts and mechanical drive shall be made of compatible materials which do not require lubrication during normal expected life. The tilter shall tilt the slats to any desired angle and hold them at that angle so that any vibration or movement of ladders and slats will not drive the tilter and change the angle of slats. A mechanism shall be included to prevent over tightening. The wand shall be of sufficient length to reach to within 1500 mm (5 feet) of the floor.

2.1.1.3 Intermediate Brackets

Intermediate brackets shall be provided for installation of blinds over 1200 mm (48 inches) wide and shall be installed as recommended by the manufacturer.

2.1.1.4 Hold-Down Brackets

Universal type hold-down brackets for sill or jamb mount shall be provided.

2.2 COLOR

Color shall be per Drawing A-601.

PART 3 EXECUTION

3.1 WINDOW TREATMENT PLACEMENT SCHEDULE

Window covering shall be provided at all exterior windows.

3.2 INSTALLATION

Installation shall be in accordance with the approved detail drawings and manufacturer's installation instructions. Units shall be level, plumb, secure, and at proper height and location relative to window units. The Contractor shall furnish and install supplementary or miscellaneous items in total, including clips, brackets, or anchorages incidental to or necessary for a sound, secure, and complete installation. Installation shall not be initiated until completion of room painting and finishing operations. Upon completion of the installation, window treatments shall be adjusted for form and appearance, shall be in proper operating condition, and shall be free from damage or blemishes. Damaged units shall be repaired or replaced by the Contractor as directed by the Contracting Officer.

-- End of Section --

SECTION 14240A

ELEVATORS, HYDRAULIC

10/93

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53/A 53M	(1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 106	(1999e1) Seamless Carbon Steel Pipe for High-Temperature Service
ASTM A 176	(1999) Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip
ASTM A 366/A 366M	(1997e1) Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality
ASTM A 568/A 568M	(1998e1) Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled
ASTM A 569/A 569M	(1998) Commercial Steel (CS) Sheet and Strip, Carbon (0.15 Maximum Percent), Hot-Rolled
ASTM D 92	(1998a) Flash and Fire Points by Cleveland Open Cup (IP36/84(89))
ASTM E 84	(1999) Surface Burning Characteristics of Building Materials

ASME INTERNATIONAL (ASME)

ASME A17.1	(1998a) Safety Code for Elevators and Escalators
ASME A17.2.2	(1998) Inspectors' Manual for Hydraulic Elevators
ASME B16.11	(1996) Forged Fittings, Socket-Welding and Threaded
ASME B31.1	(1998) Power Piping
ASME QEI-1	(1997) Standard for the Qualification of Elevator Inspectors

CODE OF FEDERAL REGULATIONS (CFR)

36 CFR 1191 Americans with Disabilities Act (ADA)
Accessibility Guidelines for Buildings and
Facilities

ENGINEERING TECHNICAL INSTRUCTIONS AND ENERGY SAVINGS ANALYSIS

TI 809-04 (1998) Seismic Design for Buildings

FEDERAL STANDARDS (FED-STD)

FED-STD 795 (Basic) Uniform Federal Accessibility Standards

INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)

ICBO Bldg Code (1997) Uniform Building Code (3 Vol.)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3 (1995) High-Pressure Decorative Laminates

NEMA MG 1 (1998) Motors and Generators

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1999) National Electrical Code

NFPA 252 (1999) Fire Tests of Door Assemblies

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Training Data: G , RE.

Information describing the training course for operating personnel, training aids and samples of materials to be used, training schedules, and notification of training.

Elevator System; G, AE.

A complete list of equipment and material, including illustrations, schedules, manufacturer's descriptive data and technical literature, performance charts, catalog cuts, installation instructions, brochures, diagrams, and other information required for fabrication and installation of the equipment. Data shall include calculations for reaction loads imposed on building by elevator systems and to demonstrate that the proposed elevator system conforms to paragraph SEISMIC REQUIREMENTS. Certified copies of list reports may be submitted in lieu of calculations. Calculations to demonstrate compliance with ASME A17.1, Rule XXIV shall be included. Spare parts data for each different item of material and

equipment specified, after approval of detail drawings and not later than 4 weeks prior to date of beneficial occupancy. Data shall include a complete list of parts and supplies, with current unit prices and source of supply, and a list of parts recommended to be replaced and replacement interval required. Data shall include appropriate sizing of electrical protective devices.

SD-04 Drawings

Elevator System; G, AE.

Detail drawings including dimensioned layouts in plan and elevation showing the arrangement of elevator equipment, anchorage of equipment, clearances for maintenance and operation; and details on hoistway, doors and frames, operation and signal stations, controllers, motors, guide rails and brackets, cylinder, and points of interface with normal power fire alarm system, HVAC or exhaust systems, and interface with emergency power systems. Drawings shall show any revised building electrical system required to make supplied elevator system function as specified. Drawings shall contain complete wiring diagrams showing electrical connections and other details required to demonstrate sequence of operation and functions of system devices. Drawings shall include the appropriate sizing of electrical protective devices which are frequently different from National Electrical Code standard sizes.

SD-06 Instructions

Framed Instructions; G, RE.

Diagrams, instructions, and other sheets proposed for posting.

SD-08 Statements

Qualification Certificates; G, RE.

Certificates of experience of elevator mechanics employed to install, supervise and test the elevator shall certify mechanics to have not less than 5 years experience installing, supervising and testing elevators of the type and rating specified. Certificate shall certify that elevator system installer is acceptable to elevator manufacturer prior to installation of elevators.

SD-09 Reports

Testing; G, RE.

Test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of installed system.

SD-14 Samples

Finishes; G, RE.

Samples of materials and products requiring color or finish selection.

SD-18 Records; G, RE

Test Procedures; G, RE

A plan detailing the testing procedures shall be submitted 60 days prior to performing the elevator tests.

SD-19 Operation and Maintenance Manuals

Elevator System; G, RE.

Six copies of operation manual outlining the step-by-step procedures for system startup, operation and shutdown. Manuals shall include manufacturer's name, model number, service manual, parts list and brief description of all equipment, including basic operating features. Six copies of maintenance manual listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides. Manuals shall include equipment layout and complete wiring and control diagrams of the system as installed. Operation and maintenance manuals shall be approved prior to training course.

1.3 QUALIFICATIONS

Hydraulic elevator shall be pre-engineered holeless type elevator system and provided by a company regularly engaged in the manufacture of elevator systems. The manufacturer shall either install the elevator system or provide letter of endorsement certifying that the elevator-system installer is acceptable to the manufacturer.

1.4 REGULATORY REQUIREMENTS

Design and fabrication shall be in accordance with ASME A17.1. The car shall have the capacity to lift a live load, exclusive of the car, at a speed as specified in the following schedule. The approximate travel, terminal floors, number of stops and openings, and the car sizes shall be as shown in the schedule. The elevators shall serve the floors with stops and openings in accordance with the requirements indicated. Elevators shall provide accessibility and usability for physically handicapped in accordance with the requirements for the handicapped in FED-STD 795 and 36 CFR 1191.

1.4.1 Elevator Schedule (Passenger)

Number of Elevators Required:	One (1)
Service:	Passenger service
Capacity:	1135 kg (2500 pounds)
Speed:	0.63 m/s (125 fpm) (full load up) (0.75 m/s (150 fpm) downspeed)
Platform Size:	21 meters (7 feet) wide by 15 meters (5'-1") deep
Clear Car Inside:	20 meters (6'-8") wide by 15 meters (5'-1") deep
Net Travel:	9.3 meters (30'-8")
Landings:	3

Openings:	Front	3
Entrance Type:	Center-opening	
	Horizontal-sliding	
	Single-speed	

1.5 DESIGNATED LANDING

For the purposes of firefighter's service and emergency operations, as required by Section 211, ASME A17.1, the designated landing or level shall be the first floor. The alternate landing or level shall be the second floor.

1.6 DELIVERY AND STORAGE

All equipment delivered and placed in storage shall be stored with protection from the weather, excessive humidity and excessive temperature variations; and dirt, or other contaminants.

1.7 FIELD MEASUREMENTS

The Contractor shall become familiar with all details of the work, verify all dimensions in the field and advise the Contracting Officer of any discrepancy before performing any work.

1.8 WARRANTY

Warranty service shall be provided for each elevator for a period of 12 months after date of acceptance by Contracting Officer. Warranty service shall be performed only by trained elevator mechanics during regular working hours and shall include manufacturer's warranty requirements including but not limited to adjusting, lubricating and cleaning of equipment and furnishing supplies and parts to keep elevator in operation, except such parts made necessary by misuse, accident or negligence not caused by the Contractor. Testing and adjustments shall be in accordance with the applicable provisions of ASME A17.1 and ASME A17.2.2. Emergency callback service shall be included and available 24 hours a day, 7 days per week, with an initial telephone response time of 1 hour and a response time of 4 hours for a mechanic to the site. Inspection and service for fire service operation seismic requirements shall be performed every 6 months. Documentation of inspection and testing, and certification of successful operation shall be provided with each unit.

PART 2 PRODUCTS

2.1 GENERAL EQUIPMENT REQUIREMENTS

2.1.1 Standard Products

Material and equipment shall be the standard products of manufacturers regularly engaged in the fabrication of elevators and/or elevator parts, and shall essentially duplicate items which have been in satisfactory use for at least 2 years prior to bid opening. Equipment shall be supported by a service organization that is available 24 hours a day, 7 days per week, with a response time of 4 hours.

2.1.2 Nameplates

Each major item of equipment shall have the manufacturer's name, address, type or style, model or serial number, catalog number, and electrical and mechanical characteristics on a plate secured to the item of equipment.

2.1.3 Special Tools

One set of special tools, calibration devices, and instruments required for operation, calibration, and maintenance of the equipment shall be provided.

2.1.4 Electrical Work

Changes to the electrical distribution system required for coordination with elevator equipment shall be performed and coordinated by Contractor, at Contractor's expense. Electrical service for elevator machines shall be 480 volt, 60-Hertz, 3-phase, 4 wire solid neutral grounded alternating current. Electric service for elevator car lighting shall be 120-volt, single-phase, 60-Hertz grounded service. Electrical work shall conform to requirements in Section 16415 ELECTRICAL WORK, INTERIOR. A disconnect switch that will shut off power to the elevator car lighting shall be provided in the elevator machine room adjacent to the elevator control panel. A telephone junction box and an elevator car lighting junction box shall be provided adjacent to each controller. A single-phase electric circuit with grounded connection for video monitor shall be provided in machine room.

2.1.5 Use of Asbestos Products

Materials and products required for manufacturing and installing elevators shall not contain asbestos.

2.2 MISCELLANEOUS MATERIALS

2.2.1 Materials for Car Enclosures

Materials for car enclosures shall meet flame spread rating 0 to 75 and smoke development 0 to 450 as tested in accordance with requirements of ASTM E 84 as established by ASME A17.1, Rule 204.2.

2.2.2 Structural Steel

Structural steel shall be hot-rolled commercial quality carbon steel, pickled, oiled, complying with ASTM A 569/A 569M and ASTM A 568/A 568M.

2.2.3 Cold-Rolled Sheet Steel

Sheet steel shall be cold-rolled commercial quality low carbon steel, Class 1, exposed matte finish, oiled, complying with ASTM A 366/A 366M and ASTM A 568/A 568M.

2.2.4 Stainless Steel

Stainless steel shall be ASTM A 176 Type 302/304, austenitic, corrosion-resistant, with grain of belting in the direction of longest dimension. Surfaces shall be smooth and without waves and shall be in compliance with ASTM A 366/A 366M.

2.3 PASSENGER ELEVATOR CAR

2.3.1 Car Fronts

Fronts for passenger elevators shall be combination door post and return panels manufactured of 1.9837 mm thick (14 gauge) stainless steel provided with necessary cutouts for operating devices. Car operating panel shall be recessed into front return panel with surface-applied operating panel cover. Position indicator in front return shall be recessed with a surface-applied cover plate.

2.3.2 Car Doors

Car doors for passenger elevators shall be constructed from 1.519 mm thick (16 gauge) sheet steel. Each door shall be sound-deadened and reinforced to receive required operating mechanism and hardware, and have two removable door guides per panel. Seams, screws or binding strips shall not be visible from within the car. Threshold shall be extruded aluminum with grooves for door guides. Exposed steel shall be finished with rust-inhibitive primer and baked-enamel in a color to be selected, unless otherwise specified. Car doors shall be equipped with a proximity-type infrared protective device having the following operation:

- a. When doors are in full-open position, doors shall be unable to initiate closing if a person comes within detection zone. Detection zone moves with doors, so that if a passenger or object enters the zone after doors have begun to close, doors shall stop, then reverse to reopen. Doors shall reclose after a brief time. A passenger entering or leaving cars shall not cause doors to reopen unless doors reach a predetermined proximity to passenger.
- b. After a stop is made, doors shall remain open for a time to permit passenger transfer, after which doors shall close automatically. This time interval shall be less for a car call than for a hall call or a coincident car/hall call.
- c. If there is either a hall call anywhere in the group or a car call in the car in question and doors are prevented from closing for a fixed time period, door protective device shall be rendered inoperative, a buzzer shall sound in car and doors shall close at approximately half speed. Normal door operation shall resume at next landing reached by car.

2.3.3 Car Platform

Car platform for passenger elevators shall be fabricated from steel plates secured to a steel frame. Steel car platforms shall be assembled into a one-piece platform with top and bottom steel plates welded to structural steel frame and covered with felt and sound-isolation.

2.3.4 Sling

Sling for passenger elevators shall be constructed of heavy steel stiles properly affixed to a steel crosshead and bolster with adequate bracing members to remove all strain from car enclosure. Steel bumpers shall be furnished for fastening sling to plunger.

2.3.5 Walls

Walls for passenger elevators shall be 2426 mm (7 feet 11-1/2 inches) high

from floor to the underside of lighting fixtures. Side and rear panels shall be 1.519 mm thick (16 gauge) sheet steel panels. [Side and rear removable panels shall be applied to car walls and shall be manufactured from 18 mm (3/4 inch) plywood or composition board finished on front, back and edges faced with plastic laminate conforming to NEMA LD 3, general purpose type.] Panels shall be mounted on car walls in a manner permitting their reversing. Panels shall be evenly spaced with not less than two panels on each side and three panels at rear with 9.5 mm (3/8 inch) separations backed up with stainless steel dividers or reveal standard with manufacturer. Vent around base shall be concealed behind removable panels.

2.3.6 Car Top, Ceiling and Light Fixtures

Car top for passenger elevators shall be manufactured from 2.657 mm thick (12 gauge) sheet steel and shall be not less than 140 mm (5-1/2 inches) high with drop-ceiling and light fixtures. Ceiling shall be 3 mm (1/8 inch) thick translucent white plastic fire-retardant light diffuser supported by polished aluminum perimeter frame and dividers to form drop-ceiling light fixture. Fluorescent light fixtures shall be dual lamp with quick-starting high-power factor, Class P ballasts with safety lamp guard clamps on fluorescent tubes. Light level shall average at least 108 lx (10 footcandles) measured at the car threshold, with the door closed. A part of car light fixture shall be removable to permit use of the emergency exit panel in top of car.

2.3.7 Emergency Exit

Car top for passenger elevators shall be manufactured with a hinged emergency exit panel of 2.657 mm thick (12 gauge) steel which opens up to clear the crosshead and car door operator. Emergency exit panel shall be hinged on counterweight side and held in place with nonremovable fastening devices at each corner, and be openable from top of car only. A minimum of two sides of exit panel shall lap exit opening by 25 mm (1 inch). Exits shall be equipped with electrical contacts which will prevent operation of car when the exit door is open and cause the alarm bell to ring.

2.3.8 Floor Finish

Floor finish for passenger elevators shall be finished with resilient tile flooring not less than 5 mm (3/16 inch) thick or flexible type homogeneous vinyl tile not less than 3 mm (1/8 inch) thick as specified in Section 09650 RESILIENT FLOORING. Tile shall be laid flush with the extruded aluminum platform threshold.

2.3.9 Base

Base for passenger elevators shall be plastic laminate, 150 mm (6 inches) high.

2.3.10 Handrails

Handrails for passenger elevators shall be mounted on each wall and shall comply with ASME A17.1, FED-STD 795 and 36 CFR 1191. For elevators with two-speed horizontal-slide openings, handrails shall be turned back to wall.

2.3.11 Exhaust Fan

Exhaust fan for passenger elevators shall be two-speed exhaust type ventilating unit mounted in car ceiling and shall be provided with a

stainless steel grille. Units shall be suitably isolated from car ceiling and shall provide at top speed of a minimum of 6 air changes per hour for car volume and car occupancy. Switches for the operation of the exhaust unit shall be located in car station locked cabinet or key-switched.

2.3.12 Communications

A telephone system in stainless steel cabinet shall be provided for passenger elevators. A vandal-resistant speaker type intercom with push-buttons to activate shall be installed in car station behind a stainless steel perforated grille and connected to a programmable auto-dialer located in machine room. Auto-dialer shall be provided with a solid-state charger unit which will automatically provide emergency power and an immediate transfer in the event of failure of normal power supply. The push-button located in car station or in separate cabinet shall be at the prescribed handicapped height and shall be identified as "EMERGENCY PHONE PUSH TO ACTIVATE". The entire communication assembly shall be approved for an elevator installation. The push button telephone shall comply with FED-STD 795 and 36 CFR 1191. The telephone communication shall not be terminated until one of the communicating parties hangs up the receiver or manually disconnects the communication link.

2.3.13 Car Emergency Lighting System

Emergency car lighting system for passenger elevators shall consist of an emergency power pack on top of the elevator and a remote lighting fixture inside elevator car located in car operating panel.

2.3.13.1 Power Pack

Power pack for emergency lighting system shall be a sealed lead-cadmium or nickel-cadmium 6-volt rechargeable batteries with solid-state controls and an integral regulating charger connected to normal power supply. Power pack unit shall contain the following:

- a. Minimum 150 mm (6 inch) diameter alarm bell connected to the elevator alarm and emergency push-button.
- b. Top of car light fixture with protective wire guard.
- c. Testing circuit and pilot light.
- d. Low-wattage pilot light indicator.
- e. Battery low-voltage disconnect.

2.3.13.2 Emergency Light Fixture

Emergency light fixture shall be located in car station inside elevator car, with flush-mounted lens and shall consist of the following:

- a. A minimum of two lamps capable of providing a minimum level of illumination of 10.8 lx (1.0 footcandle) at a point 1220 mm (4 feet) above the floor, 300 mm (1 foot) in front of car station.
- b. Steel fixture frame with chrome finish.
- c. Frosted acrylic lens, 6 mm (1/4 inch).

2.3.13.3 Remote Light Fixture

Upon interruption of normal power, remote light fixture for passenger elevators shall automatically and immediately illuminate and permit operation of alarm bell, subject to activation of emergency stop-switch or alarm button. Emergency power pack shall be capable of providing a minimum of 1 hour emergency bell operation and 4 hours of continuous illumination.

2.3.14 Protection Pads

Car shall be provided with wall protection pads with inconspicuous stainless steel pad hooks spaced not over 460 mm (18 inches) apart near the ceiling. Pads shall be heavy-quality fire-retardant treated canvas with two layers of sewn cotton batting with metal eyelets for each pad hook. Pads shall cover entire wall surface except operating devices. Pads shall be flame retardant in accordance with ASME A17.1, Rule 204.2.

2.3.15 Certificate Frame

A stainless steel certificate frame with translucent plexiglass lens of the appropriate size to receive certificate issued by inspecting agency shall be provided. Frame shall be engraved to show name of manufacturer, carrying capacity in kilograms (pounds) and maximum number of persons allowed.

2.3.16 Car Guide Shoes

Guide shoes for passenger elevators shall be the adjustable mounting type on each side of car. Shoes shall be rigidly secured in accurate alignment at top and bottom of car frame. Flexible type sliding guide shoes shall consist of a swivel-type shoe, assembled on a metal base with provisions for self-alignment. Each shoe shall be provided with renewable gibs. Car guide shoes shall be adjustable for side play between guide rails. Renewable wearing gibs shall be fabricated from a durable plastic compound material having a low coefficient of friction and long wearing qualities. Gibs shall be the type requiring minimum rail lubrication.

2.4 PASSENGER ELEVATOR HOISTWAY ENTRANCES

2.4.1 Hoistway Doors

Hoistway doors for passenger elevators shall be designed and fabricated as part of a Class B 1-1/2 Hour fire-rated door/frame assembly to meet requirements of NFPA 252 and shall bear the label of an approved testing laboratory. Doors for passenger elevators shall be hollow metal type with plain panel design not less than 32 mm (1-1/4 inches) thick with 1.519 mm thick (16 gauge) face sheet-steel panels. Sight guards to match door finish. Each door shall be reinforced with continuous vertical members and filled with sound-deadening material. Doors shall be reinforced to accept the required operating mechanism and hardware. Doors shall have two removable door guides per panel. Seams, binding strips or screws shall not be visible from the landing. Exposed steel shall be finished with rust-inhibitive primer and baked-enamel in a color to be selected, unless otherwise specified.

2.4.2 Hoistway Frames

Hoistway frames for passenger elevators shall be designed and fabricated as part of a Class B 1-1/2 Hour fire-rated door/frame assembly to meet

requirements of NFPA 252 and shall bear the label of an approved testing laboratory. Frames shall be formed 1.897 mm thick (14 gauge) sheet-steel [with stainless steel cladding] with head and jamb in flush alignment and corners welded and ground smooth. Head and jamb section shall be bolted assembly with bolts, washer and locking nut or lock washer. Frame assembly shall be securely fastened to the structure. Frames shall return to the wall. Exposed steel shall be finished with rust-inhibitive primer and baked-enamel in a color to be selected, unless otherwise specified.

2.4.3 Symbols

Raised stainless steel symbols as required by FED-STD 795 and 36 CFR 1191 of color selected, shall be provided at each floor to indicate the floor location. Symbols shall be attached with concealed fasteners. Symbols shall be placed in a location which can be seen by passenger from the opened passenger elevator doors.

2.4.4 Sills

Sills for passenger elevators shall be extruded aluminum with slip-resistant surface and machined grooves for door guides, secured to floor beams.

2.4.5 Strut Angles

Strut angles for passenger elevators shall be structural steel of size not less than 76 x 76 x 5 mm (3 x 3 x 3/16 inch) extending from sill to beam above and anchored to building structure with structural steel fastenings and bracings of structural members with a cross section of not less than strut angles.

2.4.6 Door Hangers and Housing

Each door panel shall be provided with not less than two sheave-type hangers designed for required door operation. Hanger housing and support shall be fabricated from formed Z-shaped steel angles of size not less than 5 mm (3/16 inch) thick bolted to strut angles.

2.4.7 Door Rollers

Door rollers shall be constructed with grease-packed ball-bearings and shall be tired with a sound-reducing material. Diameter of rollers shall not be less than 83 mm (3-1/4 inches) for car doors and not less than 57 mm (2-1/4 inches) for hoistway doors. Upward thrust shall be taken by a hardened and ground ball-bearing roller assembled on an eccentric stud to provide adjustment.

2.4.8 Hanger Track

Hanger track shall be of high carbon cold-drawn steel, round at top to receive door rollers, round at bottom to receive up-thrust rollers, of size engineered to accommodate load requirements.

2.4.9 Covers and Guards

Hanger covers, dust covers, toe guards and fascia plate shall be fabricated from 1.519 mm thick (16 gauge) reinforced steel and finished with baked-enamel. Hanger covers shall extend the full door travel and shall be mounted in sections for ease of servicing door hangers. Dust covers shall

be provided over top terminal landing door only and shall be secured to hanger housing and building structure. Toe guards shall be secured to sill. Fascia plates shall be provided between each door hanger housing and sill.

2.5 PASSENGER ELEVATOR DOOR OPERATION

Car and hoistway doors for passenger elevators shall be operated simultaneously by an electric-power door operator. Doors shall operate smoothly in the opening direction and closing direction and be electrically or hydraulically cushioned to stop at both the full-open and full-closed position. Operators shall be high-speed heavy-duty type which will provide an average door-opening speed of 0.76 m/s (2-1/2 fps). Car and hoistway doors shall be opened and closed simultaneously in a maximum time of 4.5 seconds. When on automatic operation door-closing time shall not exceed 4.5 seconds and door-closing force shall not exceed 130 N (30 pounds). Reversal of doors when closing shall be accomplished by the "DOOR OPEN" button, car door safety edge, or interruption of the photoelectric light beams. Doors shall be arranged so that doors can be opened manually in the event of power failure.

2.6 PASSENGER ELEVATOR OPERATING AND SIGNAL FIXTURES

2.6.1 General

Elevator fixtures and panels for passenger elevators shall be constructed of 3 mm (1/8 inch) thick faceplates of stainless steel. Fastenings for all exposed fixtures shall be secured with tamper-proof spanner-head screws of same material and finish as fixture. Hall and car call-buttons shall be the call-register type with a low-voltage power supply not to exceed 48 volts. Pressure on a button shall illuminate button to indicate that a call in the desired direction has been registered. Car and hall fixtures shall be designed and located at the prescribed height to accommodate the handicapped in accordance with FED-STD 795 and 36 CFR 1191 for passenger elevators only. Handicapped markings shall be integral with faceplates in accordance with FED-STD 795 and 36 CFR 1191. Surface-applied markings are not acceptable. Engraving shall be black-filled except for fire-service identification which shall be red-filled. Operating and signal fixture contacts and lamps shall be completely enclosed in steel boxes finished with a baked-enamel. Boxes for hall landing devices shall be equipped for proper adjustment to wall. Lamps shall be installed in light-tight compartments. Cover-plates shall be provided with rubber gaskets when exposed to weather or harmful contaminants. Replacement bulbs shall be readily available from three sources.

2.6.2 Car Operating Panel

Car operating panel for passenger elevators shall be provided with the necessary raised (0.8 mm (0.03 inch)) markings for the handicapped, and shall include a series of minimum 20 mm (3/4 inch) diameter push-buttons numbered to correspond to the floor served and various additional switches, buttons and light jewels, including emergency stop, alarm button, "DOOR OPEN" button and communication speaker. Operating buttons shall be of manufacturer's standard design. [Operating buttons shall be vandal-resistant metal encased and embossed to permit illumination when a call is registered. Buttons shall be designed with 0.8 mm (1/32 inch) operating clearance to set on faceplate in lieu of the button mechanism. Buttons shall have maximum protrusion of 5 mm (3/16 inch) beyond the faceplate and shall have beveled edges to prevent damage from side blows.

Buttons and switches not required for automatic or fire-service operation shall be key-operated and mounted on front-return car operating station. Elevator number and "NO SMOKING" shall be international symbol engraved on upper portion of car. Operating panel in car shall consist of a flush-mounted panel containing the following operating devices:

- a. "DOOR OPEN" button.
- b. "DOOR CLOSE" button.
- c. Key-operated car fan/light switch.
- d. Key-operated ventilating blower switch/call light.
- e. Communication speaker phone, grille and push-to-call button.
- f. Emergency stop-switch key-operated when operated will stop the car independently of normal stopping devices. Operation of emergency stop switch shall not cause any power variance or surge that may affect the operation or condition of the control panel or its components.
- g. Emergency signal-switch connected to a 150 mm (6 inch) diameter signal bell outside of elevator hoistway at first floor located as shown or as directed.
- h. Key-operated inspection switch which will render normal operation inoperative for the purpose of using the hoistway access switch.
- i. Key-operated fire-service switch and light jewel.

2.6.3 Auxiliary Car Operating Panel

Auxiliary car operating panel for passenger elevators shall be similar in design to main car panel, and shall include all devices necessary for automatic operation such as emergency stop switch, alarm bell, "DOOR OPEN" button.

2.6.4 Hall-Call Station

Hall-call operating devices for passenger elevators at landing shall consist of an "UP" push-button at bottom landing, a "DOWN" push-button at top landing, and "UP" and "DOWN" push-buttons at all other landings. Buttons shall be manufacturer's standard design, vandal-resistant metal encased and back-lighted to permit illumination when a call is registered. Buttons shall be designed with 0.8 mm (1/32 inch) operating clearance to seat on faceplate in lieu of button mechanism. Buttons shall have maximum protrusion of 5 mm (3/16 inch) beyond faceplate with beveled edges to prevent damage from side blows.

2.6.4.1 Commandeering Switch

Key-operated commandeering switch for passenger elevators shall be provided at each landing and located in landing call-button cover plate. Switch shall be momentary pressure type with the key removable only in "Off" position and shall be keyed to match the independent operation switch specified for car operating devices.

2.6.4.2 Fire-Service Switch

Fire-service switch for passenger elevators shall be located at the designated landing.

2.6.5 Direction Lanterns

Lanterns for passenger elevators shall be in accordance with FED-STD 795 and 36 CFR 1191 and shall be provided at all floor landings and in each car entrance column. Lanterns shall be the manufacturer's standard, vandal-resistant design. Lanterns shall signal the approach of a stopping car when car is a predetermined distance from landing.

2.6.6 In-Car Car-Position Indicator

Indicator numerals and directional arrows for passenger elevators shall be flush-mounted faceplate with black-filled engraved numerals not less than 25 mm (1 inch) high and 10 mm (3/8 inch) diameter vandal-resistant light jewels directly beneath each number. As car travels through hoistway the car position shall be indicated by illumination of light jewel corresponding to landing at which the car is stopped or passing. Necessary light baffles shall be provided. Floor numerals and letters shall illuminate white. A position indicator of the digital-readout or dot-matrix type (minimum 50 mm (2 inch) high indication) shall be provided in car transom panel. Number corresponding to car position shall remain illuminated when motor drive is shut down. Illumination shall be shrouded in an approved manner to protect against glare from car lighting.

2.6.7 Audible Signals

An automatic voice announcement of the floor landing at which the car stops shall be provided inside each car. In addition, an audible signal shall be provided at each floor landing and shall sound coincident with the landing lantern illumination indicator. An audible signal shall be provided at each floor landing and in each car and shall sound coincident with the lantern illumination indicators. The audible signal shall be no less than 20 decibels with a frequency no higher than 1500 Hz. The audible signal shall sound once for UP direction and twice for DOWN direction.

2.6.8 Combination Hall-Position Indicator and Directional Arrows

Combination hall-position indicator and directional arrows for passenger elevators shall be provided at first floor landing directly above entrance frame. A digital-readout position and direction indicator (minimum 50 mm (2 inch)) high indication) for passenger elevators shall be provided over first floor entrance. As elevator travels in hoistway, elevator position shall be indicated by illumination in alpha-numeric characters corresponding to the landing where elevator is stopped or passing. Number corresponding to position of car shall remain illuminated when motor is shut down. An audible signal shall sound in elevator car to indicate that the elevator is stopping or passing a floor served by elevator. Fixture design and operation shall be similar in design to that specified for Car Position Indicator.

2.7 PASSENGER CAR OPERATION (SINGLE-CAR SELECTIVE/COLLECTIVE)

Car shall be arranged so that by pressing one or more car buttons or landing buttons the car will start automatically and stop at first floor for which the button has been pressed which corresponds to the direction in which the car is traveling. Car shall stop in the order in which the

floors are reached by the car and at all floors for which calls have been registered, regardless of the sequence in which buttons have been pressed, provided button for a given floor has been pressed sufficiently in advance of car's arrival at that floor to permit the stop to be made. If car buttons have not been pressed, and car responds to several DOWN calls, car shall travel to highest DOWN call first and then reverse to collect UP calls. UP calls shall be collected in the same way when car starts DOWN in response to UP calls by first stopping for the lowest UP call registered. When a car has stopped in response to the pressing of a landing button and a car button is pressed corresponding to the direction in which the car has been traveling, within a predetermined interval of time after the stop, the car shall continue in that direction regardless of other landing calls registered. While car is in motion landing calls in the opposite direction of car movement shall not affect the operation of car but calls shall remain registered. After last car call has been answered in the direction the car is traveling, car shall automatically reverse and answer registered landing calls and all car calls in the order the landings are reached. When all calls have been answered, the car shall stop at the last floor served and shall have the doors closed.

2.8 AUTOMATIC ELEVATOR OPERATION

2.8.1 General

The operating device shall consist of a series of push-buttons in the car numbered to correspond to various landings, "UP" and "DOWN" buttons at intermediate landings and a single button at terminal landing. To meet the elevator operation requirements specified in this section all buttons shall be connected electrically to the control system which governs the floor selection, car selection, direction of travel and governs the acceleration and retardation.

2.8.2 Operation

Car calls shall be registered within the car by pressing the button corresponding to the designated floors. Hall calls shall be registered by pressing buttons in the corridor push-button fixture. Once the demand for elevator service has been established and the car has received a start signal the car operation shall be as follows.

2.8.2.1 Door Closing

Doors shall close automatically. When doors are fully closed and the interlock circuit established, the car shall start to move in the direction established by control system. Car shall accelerate and decelerate automatically and stop at first floor for which a car button has been registered or at first floor for a corridor demand which has been assigned to car. Car shall stop at all floors for which car calls are registered in the order in which the floors are reached and shall stop for any corridor demands assigned to the cars in the order in which the floors are reached.

2.8.2.2 Door Opening

Doors shall open automatically as car reaches the landing. After a predetermined time the doors shall close and the car shall proceed to answer the remaining car or assigned corridor calls. A protective device such as a safety edge and light beam device shall be provided on car door and when activated will prevent closing of doors. Cars shall become available for assignment at whatever floor the last car demand has been

satisfied in the direction in which the car is traveling.

2.8.2.3 Car Dispatch

When car does not receive a demand dispatch at dispatching floor for an adjustable time period up to 10 minutes set initially at 5 minutes, the motor drive unit shall be switched-off. If the car's switched-off motor drive unit receives a demand dispatch the motor drive unit shall automatically restart.

2.8.2.4 Door Dwell-Time

Door open dwell-times shall be adjustable so that the open time for a car call is shorter than the open time for corridor calls and second passengers. If a longer time is needed for passenger entry, doors can be prevented from closing or reversing by the light beam door control, the protective leading edge on car door, or by pressing "DOOR OPEN" button in car. Door dwell-times shall comply with FED-STD 795 and 36 CFR 1191.

2.8.3 Anti-Nuisance

Passenger elevators shall be provided with a system which will cancel all car calls in the event that between 3 to 5 times the number of car calls are registered as there are passengers in car, allowing 70 kg (150 pounds) per passenger.

2.8.4 Door Operation

Double-door operation are not acceptable for passenger elevators. If an UP traveling car has a passenger for an intermediate floor and a DOWN call is registered at that floor with no-calls above car, the car shall travel to floor, open the door and let passenger out, then light the DOWN direction arrow in hall lantern and accept the waiting passenger who registered the DOWN call. Doors shall not perform the open-close cycle before elevator proceeds to next call.

2.8.5 Automatic Power Shutdown

Automatic power shutdown of the elevators will be initiated by a waterflow switch supervising sprinklers located in the elevator machine room or in the elevator hoistway. Provide heat detectors which are fixed-temperature-rate-of-rise type, rated at 57 to 60 degrees C (135 to 140 degrees F) adjacent to each sprinkler head in the hoistway(s) and in the machine room. Heat detectors shall be connected to the elevator control system which shall cause the following to the affected elevators), upon activation of the heat detector.

- a. Elevators which are in motion will proceed to the nearest available landing away from fire floor, and shall cause power-operated doors to open and remain open until manually reset. The fire floor is considered the floor where the actuated heat detector is located.
- b. Elevators which are standing at a landing with open doors will remain open at the floor. If power-operated doors are closed, the elevator system will cause doors to open.

2.9 SENSOR AND CONTROL WIRE SURGE PROTECTION

Digital and analog inputs shall be protected against surges induced on control and sensor wiring. Digital and analog outputs shall be protected as shown against surges induced on control and sensor wiring installed outdoors. Fuses shall not be used for surge protection. The inputs and outputs shall be tested in both normal mode and common mode using the following waveforms:

- a. A 10 microsecond rise time by 1000 microsecond pulse width waveform with a peak voltage of 1500 volts and a peak current of 60 amperes.
- b. An eight microsecond rise time by 20 microsecond pulse width waveform with a peak voltage of 1000 volts and a peak current of 500 amperes.

2.10 COMMUNICATIONS LINKS SURGE PROTECTION

Communications equipment shall be protected against surges induced on any communications link. Cables and conductors, except fiber optics, which serve as communications links from Motor Control Room (MCR) to field equipment, and between field equipments shall have surge protection circuits installed at each end. Protection shall be furnished at equipment and additional triple electrode gas surge protectors rated for the application on each wireline circuit shall be installed within 1 m of the building cable entrance. Fuses shall not be used for surge protection. The inputs and outputs shall be tested in both normal mode and common mode using the following two waveforms:

- a. A 10 microsecond rise time by 1000 microsecond pulse width waveform with a peak voltage of 1500 volts and a peak current of 60 amperes.
- b. An eight microsecond rise time by 20 microsecond pulse width waveform with a peak voltage of 1000 volts and a peak current of 500 amperes.

2.11 COMMUNICATIONS LINKS OVER VOLTAGE PROTECTION

Communications equipment such as MODEMs, line drivers, and repeaters shall be protected against overvoltage on any communications link conductors. Cables and conductors, which serve as communications links, except fiber optics, shall have overvoltage protection for voltages up to 480 Vac rms, 60 Hz installed. Instrument fuses or fusible resistors are required for this application.

2.12 FIREFIGHTERS SERVICE

Firefighter service shall be in accordance with ASME A17.1 for automatic elevators. Elevator lobby and machine room smoke detectors shall be photoelectric spot-type smoke detectors. Smoke detectors shall be powered from the building fire alarm control panel. Elevator lobby and machine room smoke detectors shall be in accordance with Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE.

2.13 ELEVATOR POWER UNIT

2.13.1 Pumping and Control Mechanism

Hydraulic fluid shall be provided in the reservoir, pump and control valve.

Hydraulic fluid shall have a minimum fire point of 190 degrees C (375 degrees F) as established by ASTM D 92. If oil temperature drops below pre-set minimum, elevator shall be dispatched automatically to lowest terminal floor at which point the pump will bypass oil in system without car motion until pre-set temperature is reached. Normal response to passenger demand shall not be affected by this control. Resistance type heating elements do not meet the intent of this specification.

2.13.1.1 Oil Temperature Device

An oil temperature device shall be provided that will maintain oil temperature between 21 degrees C (70 degrees F) and 38 degrees C (100 degrees F) regardless of ambient temperatures.

2.13.1.2 Pump

Pump shall be a rotary-positive displacement type for oil-hydraulic elevator service designed for steady discharge with minimum pulsation to give smooth and quiet operation, with an output which will not vary more than 10 percent between no-load and full-load on the elevator. Operating pressure shall not exceed 2760 kPa (400 psi).

2.13.1.3 Piping

Piping shall be ASTM A 53/A 53M Grade E or S, ASTM A 106 Grade B, or grooved piping system of minimum schedule 40 seamless steel conforming to ASME A17.1 and ASME B16.11. Pipes shall conform to the cleanliness requirements of ASME B31.1.

2.13.1.4 Motor

Motor shall be especially designed for oil-hydraulic elevator service and shall be of standard manufacture duty rating and provided with specified speeds and loads.

2.13.1.5 Oil-Control Unit

Oil-control unit shall contain the following valve assemblies:

- a. Automatic shut-off valve shall be provided in the oil-supply line as close to the cylinder inlet as possible. When there is a 10 percent drop in NO-LOAD operating pressure, the automatic shut-off valve shall be activated. When activated, the device shall immediately stop the descent of elevator and hold the elevator until it is lowered by use of the maximum lowering feature of the valve. Manual lowering feature of automatic shut-off valve shall be arranged to limit the maximum descending speed of elevator to 0.08 m/s (15 feet per minute). Exposed adjustments of automatic shut-off shall have the means of adjustment sealed after being set to the correct position.
- b. Relief-valve for hydraulic shall be externally adjustable and shall bypass the total oil flow without increasing back pressure by more than 56 percent above working pressure.
- c. Safety check-valve shall close quietly without permitting any perceptible reverse flow and shall be designed to support the elevator on a positively locked column of oil when car is at rest.

- d. Up-start and stop valve shall be externally adjustable and shall bypass oil flow during the start-and-stop of motor-pump assembly. Valve shall close slowly, gradually diverting oil to the jack unit to insure smooth up-start and up-step.
- e. Lowering and leveling valve shall be externally adjustable for drop-away speed, lowering speed, leveling speed and stopping speed to insure smooth down-starts and stops. Leveling valve shall be designed to level the car to floor in the direction the car is traveling when slowdown is initiated.
- f. Manual lowering valve shall be capable of lowering the elevator car in event of power failure. Manual-lowering valve shall be arranged to limit the maximum descending speed under manual operation to 0.08 m/s (15 fpm).
- g. A service check-valve shall be installed in oil supply line between power unit and jack.

2.13.1.6 Storage Tank

Storage tank shall be single-wall construction of steel with a steel cover. Manufacturer's recommendation for the type of oil to be used shall be included in written instructions for the care, adjustment and maintenance of equipment.

2.13.1.7 Controller

Electric controller shall be of the microprocessor based logic type with battery backup provided with reduced voltage starting. Components required for proper elevator performance shall be neatly mounted and wired and completely enclosed in a cabinet with a mechanically-latched door. Control cabinet shall be designed for mounting on power unit, wall or floor stand. Electric control apparatus shall be completely isolated from oil reservoir.

A feature shall be incorporated in electrical control circuit which will cause elevator car to descent automatically to the lowest terminal landing, if the system runs low on oil during ascending of the car. If power-operated doors are used, the car and hoistway doors shall automatically open when car reaches landing to allow passengers to exit. Parked car shall have doors in closed position and all control buttons shall be made inoperative.

2.13.2 Sound Reduction

Sound-insulating panels shall isolate airborne noise from motor pump assembly. Openings shall be provided to adequately ventilate the power unit motor. A minimum of two sound-isolating couplings shall be installed in oil line in machine room between pump and jack. Couplings shall be designed and manufactured to be blowout proof. Oil-hydraulic silencer shall be installed in oil line near power unit and shall contain pulsation absorbing material surrounded by a blowout-proof housing. Power unit assembly shall be mounted on vibration pads to isolate the unit from building structure.

2.14 LEVELING DEVICE

Elevators shall be equipped with a 2-way leveling device to automatically bring the car to floor landings. Car shall automatically re-level at each

landing to correct the overtravel and undertravel, and maintain the level regardless of load on car. Electric stopping system shall be arranged so that the car will stop level with the floor before brake is set. Stopping accuracy shall not exceed a plus or minus 6 mm (1/4 mm).

2.15 JACK UNIT

A telescopic, holeless jack system shall be designed and constructed of sufficient size to lift the gross load to the height specified and shall be free from oil leakage. Brittle material such as grey cast iron shall not be used in jack construction. Telescoping plunger shall be fabricated of heavy seamless steel tubing accurately turned and polished

- a. Stop-ring welded or screwed to the plunger to positively prevent plunger from leaving the cylinder.
- b. Internal guide bearing.
- c. Packing or seal.
- d. Drip ring around cylinder top.
- e. Outer cylinder made of steel tubing.
- f. Air bleeder.
- g. Brackets welded to jack cylinder for supporting the elevator on pit channels.
- h. Scavenger pump with copper tubing connected to the tank.

2.16 ELEVATOR SUPPORTS

Structural steel beams, inserts, brackets, bolts and fastening devices shall be provided for proper installation of elevator equipment. Wood plugs are not acceptable.

2.17 BUFFERS

Buffers shall be of design suitable for depth of pit. Type of buffer used shall be tested and approved for compliance with elevator service requirements before installation. Pipe struts and steadiers shall be provided as required for pit conditions. A metal plate with information concerning stroke and load-rating shall be permanently fastened to each buffer. Pit-mounted buffers shall have an adequate stroke designed to bring the fully-loaded car and counterweight to rest from governor tripping speed at an average rate of retardation not exceeding gravity. Moving portion of buffer shall be designed to be accelerated by the car without noticeable peak retardation. Spring buffers shall be in accordance with ASME A17.1.

2.18 LUBRICATION POINTS

Every part subject to movement friction shall be provided with provisions for oil or grease lubrication. All points of lubrication shall be readily accessible.

2.19 SEISMIC REQUIREMENTS

Seismic protection shall be provided in conformance with TI 809-04 for general guidance and computation of forces (1.0 G horizontal and 1.0 G vertical minimum), ASME A17.1, Rule XXIV, and ICBO Bldg Code as shown on the drawings. The Contractor shall hire a registered engineer to submit the stamped calculations and drawings.

PART 3 EXECUTION

3.1 INSTALLATION

Elevators and equipment shall be installed in accordance with ASME A17.1 and manufacturer's recommendation. Guide rails shall be set plumb and parallel and attached to guide rail brackets secured to building structure as per manufacturer's recommendations. Steel shim plates shall be used for aligning equipment. Guide rail sections shall be joined together in accordance with ASME A17.1. Guide rails shall be thoroughly cleaned and made smooth before elevator is put into operation. During installation all stainless steel shall be protected.

3.2 FIELD WELDING

When structural or load-bearing members are to be field welded, welding and qualification of welders shall be as specified in Section 05055WELDING, STRUCTURAL.

3.3 ELEVATOR WIRING

Wiring shall be provided for electrically-operated items of elevator equipment to comply with requirements of NFPA 70 and Section 16415 ELECTRICAL WORK, INTERIOR. For control and signal circuits wire shall be minimum No. 18 AWG. For power and lighting circuits wire shall be minimum No. 12 AWG. Work light fixtures equipped with 150 watt incandescent lamps and ground duplex receptacles shall be provided at top and bottom of car. Work light fixtures and traveling cable junction boxes shall be located to provide illumination at junction boxes. Wiring shall terminate in junction boxes. Wires shall be identified and shall match symbols shown on wiring diagrams. Control and signal wires shall be brought to accessible numbered terminal blocks on the controller. Intra-panel wiring shall be flame-resistant type.

3.3.1 Traveling Cables

Cables shall terminate at numbered terminal blocks in car and machine room. Traveling cable shall be provided with a separate shielded circuit for communication system and hang to obtain proper size of loop. Traveling cable shall be provided with 10 percent spare conductors for each car.

3.4 PAINTING AND PIPE COLOR CODE MARKING

Except for factory-finished items and corrosion-resistant items, machined surfaces shall be painted as specified in Section 09900 PAINTING, GENERAL.

3.5 TESTING

Testing shall be in accordance with requirements of ASME A17.1 and ASME A17.2.2; and as specified below. The Contractor shall conduct a complete test of the system. After the system has passed all tests, the Contractor

shall notify the Contracting Officer in writing, seven days prior to the time of performing the acceptance test, that the system is complete and is ready for final acceptance testing. The Contractor after receiving written approval from the Contracting Officer will conduct a complete acceptance test of the system. The Contractor shall provide the services of an elevator inspector, employed by an independent testing company to inspect the elevators, witness the final testing and certify the elevators. The inspector shall meet all qualification requirements of ASME QEI-1 and shall be certified in accordance with ASME QEI-1. The Contractor shall provide an elevator certificate signed by the inspector for the elevator. The certificate shall be provided to the Contracting Officer within 30 day after the completion of all testing.

3.5.1 Testing Period

The elevator shall be tested with the specified rated-load in car continuously for a period of 35 percent of the duty time. During the test run the car shall be stopped at all floors in both directions of travel for a standing period of 10 seconds per floor. A manual test of the final limits (UP and DOWN overtravel) shall also be performed.

3.5.2 Speed Load Testing

The actual speed of elevator car in both directions of travel shall be determined with the rated-load and with no-load in the elevator car. Actual measured speed of car with the rated-load in the UP direction shall be within 5 percent of rated speed. The maximum difference in actual measured speeds obtained under the various conditions outlined shall not exceed 10 percent of the total difference between the UP and DOWN speeds.

3.5.3 Car Leveling Testing

Elevator car-leveling devices shall be tested for accuracy of landing at all floors with no-load in car, with symmetrical load in car and with the rated-load in car in both directions of travel.

3.5.4 Temperature Rise Testing

Temperature rise of hydraulic pump motor, motor drive, exciter and booster shall be conducted during the full-load test run for minimum one hour. Under these conditions, temperature rise of equipment shall not exceed the requirements established in NEMA MG 1 Chapter 12. Test shall be started when all parts of equipment are within the temperature required by NEMA at time of starting tests.

3.5.5 Insulation-Resistance Testing

Insulation-resistance testing shall be performed to ensure that the complete elevator wiring systems will be free from short circuits and grounds. Electrical conductors shall have an insulation-resistance of not less than 1 megohm between each conductor and ground, and not less than 1 megohm between each conductor and all other conductors. Prior to testing, provisions shall be made to prevent damage to electronic devices.

3.6 FRAMED INSTRUCTIONS

Two sets of instructions shall be typed and framed under glass or in laminated plastic, and posted side-by-side in the elevator room where directed before acceptance of elevator systems. First set of instructions

shall include wiring and control diagrams showing the complete layout of elevator system. Second set of instructions shall include the condensed operating instructions describing preventive maintenance procedures, the methods for checking the elevator system for normal safe operation, and the procedures for safely starting and stopping the elevator system.

3.7 OPERATOR TRAINING

Contractor shall conduct a formal training course for operating Government personnel which shall include care, lubrication, adjustment and maintenance of elevator equipment. Training period shall consist of a total of 24 hours of normal working time and shall start after the system is functionally completed but prior to final acceptance tests. Field instructions shall cover all of the items contained in the operating and maintenance instructions, including demonstrations of routine maintenance operations. Contracting Officer shall be notified at least 14 days prior to date of starting the training course.

-- End of Section --